

SURGICAL TREATMENT
OF
BRIGHTS DISEASE

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The Surgical Treatment of Bright's Disease

BY

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FRANK F. LISIECKI, Publisher
9 to 15 MURRAY STREET
NEW YORK

1904

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P R E F A C E.

The time is not ripe for a complete systematic presentation of the subject of the surgical treatment of Bright's disease. The subject is too modern, and too many questions relating thereto still await solution.

There is manifest, however, a very active and insistent demand on the part of the medical profession for such facts and information, especially as regards results, as may at present be available concerning the new treatment of so common and so fatal a malady as chronic nephritis. To meet this demand as far as is possible at the present writing is the object of this volume.

The various contributions by the author to the literature of the subject, the most recent of which have appeared almost contemporaneously with the inception of the present work, are believed to embody with reasonable completeness our present knowledge of the surgical treatment of Bright's disease. These contributions arranged in chronological order of publication make up two-fifths of the present volume.

The remaining three-fifths is entirely new matter, never before published, and deals almost wholly with that phase of the subject which is at present exciting the keenest interest: the results.

A bibliography, believed to be fairly complete to date of going to press, is appended. An index and cross-references may serve to facilitate the search for special points of information.

G. M. E.

59 West 49th Street, New York.

August, 1904.

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CHRONIC NEPHRITIS AFFECTING A MOVABLE KIDNEY AS AN INDICATION FOR NEPHROPEXY.

BY GEORGE M. EDEBOHLS, M. D.

(Reprinted from the *Medical News*, April 22, 1899).

The voluminous literature of movable kidney is practically silent upon the subject matter indicated in the title of this paper. The few and scattered words devoted to the matter serve simply to give expression to the sentiment that, in the presence of chronic nephritis, nephropexy for movable kidney is to be avoided in common with all other operations not called for as a vital indication. In quite an extensive search of the literature I have been unable to find the record of a single case of nephropexy for movable kidney performed upon a patient suffering at the time of operation from either acute or chronic nephritis.

While recently reviewing the clinical records of 154 nephropexies performed by myself upon 118 patients during the past nine years, with a view to ascertaining the final results, I found that I had anchored the kidney or kidneys of six patients, who, at the time of operation and for a greater or less period preceding, were known to have had chronic nephritis. In view of the paucity, or rather non-existence, of similar records, I may be pardoned a little prolixity. I will premise by stating, and wish to emphasize the point, that in none of the first five cases was the nephropexy undertaken with any idea of favorably influencing the chronic nephritis known to exist; the indication for operation was given simply by the existence, in an aggravated degree, of the usual symptoms due to *mobility* of the kidney or kidneys. The effects of the nephropexy upon the chronic renal inflammation, whatever they might prove to be, were simply hazarded in view of the necessity of relieving the patient of a number of intolerable symp-

toms. The fortunate effects in three of these five cases influenced me to regard the chronic nephritis of the sixth as a new indication, additional to other well recognized and admitted existing indications, of nephropexy for movable kidney. I have recently seen two further cases of chronic nephritis associated with movable kidney, and have advised nephropexy in the hope of favorably influencing the kidney inflammation; both patients are having operation under consideration.*

CASE 6—Miss S. O., aged twenty years, came under observation in January, 1898, suffering from mobility of both kidneys, endometritis, and interstitial nephritis. The duration of the latter could not be ascertained. In view of the favorable results obtained in the cases already cited bilateral nephropexy was advised, both to relieve the symptoms due to mobility of the kidney and with the hope of favorably influencing the nephritis. Both kidneys were anchored and the uterus curetted, January 10, 1898.

At operation the right kidney was found perfectly healthy. The left kidney, on the other hand, was large, irregular in shape, hard from increase of connective tissue, and with firmly adherent capsule proper; in short, it presented the changes characteristic of chronic interstitial nephritis. Primary union of both wounds, uneventful convalescence, and rapid disappearance of every former symptom. Frequent examinations of the urine were made by Professor H. T. Brooks and Dr. A. Strong, who kindly assumed the treatment of patient after operation. Albumin and casts disappeared permanently from the urine one month after operation. One year after operation patient perfectly well, both kidneys securely anchored and urine free from albumin and casts.†

The fact that stands out strikingly in the above record of clinical experience is the disappearance of all symptoms and signs of chronic nephritis in four out of six patients after and, in all human probability, as a consequence of nephropexy. For, be it

*The histories of the six cases mentioned appear in full in the original communication. Cases 1, 2, 3, 4 and 5 are detailed and carried to date under the same numbers on pages 148 to 156, and are therefore here omitted. Case 6 is historical as representing the first operation ever undertaken with the deliberate purpose of curing chronic Bright's disease. The details of the case are for that reason here reprinted verbatim from the original publication.

†The further history of the patient and the final result may be found on page 156, under Case No. 6.

recalled, none of the patients subsequently to nephropexy received any treatment whatsoever directed to the nephritis. In one patient with extensive interstitial and cystic changes in the anchored kidney, the latter became detached eight or ten months after operation and the nephritis persists. The redetachment of the kidney in this case was probably due to the advanced cystic degeneration. One patient finally has been lost track of after bilateral nephropexy, and nothing is known respecting the continuance of her nephritis except that it still persisted six weeks after operation.

An important clinical fact indicated by the four successful cases is that chronic nephritis is probably unilateral much oftener than is usually suspected. In two of the four cases all the symptoms and signs of chronic nephritis disappeared after fixation of a movable right kidney proved at operation to be the seat of chronic interstitial changes. The left kidney in these cases must have been healthy, otherwise the urine would have continued to furnish albumin and casts even after convalescence of the right kidney. In each of the other two patients upon whom bilateral nephropexy was performed the nephritis was found unilateral, affecting the right kidney in one and the left in the other. In all of these four cases the chronic nephritis was unilateral, *i. e.*, it affected only one organ, a fact pregnant with hope and comfort to sufferers from chronic nephritis.

Judging from the evidence afforded by frequent examinations of the urine, the chronic nephritis in each of the four cases disappeared in two months, four months, one year, and one month respectively after nephropexy. The fact of the disappearance of chronic nephritis without further treatment after nephropexy amounts to almost proof positive that the displacement of the kidney was the original cause of the nephritis. My own not inconsiderable experience with movable kidney has furnished numerous examples of congestion of the kidney, as evidenced by traces of albumin and hyalin casts in the urine, accompanying this condition. This congestion of the kidney, due to displacement with consequent distortion and greater or less obstruction of the renal vessels, and especially of the renal vein, is as good as uniformly relieved by a successful nephropexy. If displacement of the kidney gives rise to congestion why may not the latter condition occasionally progress to inflammation? And if nephropexy of a movable kidney will do away with renal congestion why may not the bene-

ficial effects of the operation, occasionally at least, assert themselves even when the circulatory disturbances have already progressed so far and been so long maintained as to result in the changes characteristic of chronic nephritis?

That a well-anchored kidney is in a better position and condition to maintain or regain its organic integrity, as the case may be, than a movable kidney, is patent from the evidence already adduced. An added proof is afforded by the investigations of Wolff into the subsequent histories of fourteen cases of nephropexy performed by E. Rose, and corroborated by my own observations upon a much larger number of patients upon whom I have performed nephropexy, unilateral or bilateral. In not one of Rose's cases and in none of my own, except the cases of chronic nephritis existing at operation detailed in this paper, could any evidences of renal changes as evidenced by the presence of albumin or casts in the urine be found at the last examination, made from six months to fourteen years after operation.

The various experiences and observations recorded in this paper will, if corroborated in larger numbers, necessitate a modification of current opinions on the etiology of chronic nephritis. Mobility of the kidney will probably be found as playing a *very* important part in the causation of chronic nephritis. Just as probably the therapy of chronic nephritis, in so far as the latter be found to be dependent upon and connected with movable kidney, will become surgical. My own favorable experience warrants me for the present in regarding chronic nephritis affecting a movable kidney as an important indication for nephropexy.

FIRST FORMAL PROPOSITION TO TREAT CHRONIC BRIGHT'S DISEASE BY DECAPSULATION OF THE KIDNEYS.

BY GEORGE M. EDEBOHLS, M. D.

The following paragraph from an article on "Bandages for Nephroptosis," by the writer, is reprinted verbatim as it appeared in the *Medical Record*, May 4, 1901, page 601:

In connection with these eighteen nephropexies performed upon patients with chronic nephritis, the interesting observation was made that a cure of the nephritis followed operative fixation of the kidney in a large proportion of cases. Albumin and casts disappeared permanently from the urine. My earlier observations in this direction were published two years ago under the heading, "Chronic Nephritis Affecting a Movable Kidney as an Indication for Nephropexy." Growing experience has added confirmation to the deductions drawn in this paper, and I am now prepared to go a step farther and to propose surgical intervention for the purpose of attempting a cure of chronic nephritis, whether the affected kidney be movable or in place. The surgical intervention, as in my practice heretofore, is to take the form of a nephropexy with denudation of the kidney cortex when the kidney is movable. When the inflamed kidney is not movable, and operative fixation of the organ is, therefore, not indicated, I shall content myself with entirely denuding the kidney of its capsule proper, and thus affording free opportunity for the formation of new vascular connections, on a large scale, between the blood vessels of the kidney and those of its fatty capsule. The relief to the kidney circulation by the establishment of an abundant collateral circulation, which, I believe, has been the chief factor in the production of the favorable results I have thus far obtained in the cure of Bright's disease affecting a movable kidney, will thus be applied to all

chronically inflamed kidneys, whether movable or not. The rationale of the procedure will resemble, though with a distinct difference, that which applies to the modern surgical treatment of ascites due to cirrhosis of the liver. The writer is at present engaged in collecting from his operative clinical experience the evidence bearing upon this subject, with a view to its presentation in print in a fuller and more formal manner.

THE CURE OF CHRONIC BRIGHT'S DISEASE BY OPERATION.

BY GEORGE M. EDEBOHLS, M. D.

(Reprinted from the *Medical Record*, December 21, 1901).

The proposition to treat chronic Bright's disease by operation was first made by the author in a paper entitled "Chronic Nephritis Affecting a Movable Kidney as an Indication for Nephropexy," published in the *Medical News* of April 22, 1899. The proposition was based upon the favorable results obtained in four out of six cases in which the writer had performed nephropexy for the purpose of anchoring a movable kidney in the presence of well-marked chronic Bright's disease. In five of these six cases nephropexy was undertaken without any idea of favorably influencing the chronic nephritis known to exist; the indication for operation being given solely by the existence, in an aggravated degree, of the usual symptoms due to mobility of the kidney or kidneys. The effects of nephropexy upon the co-existing chronic Bright's disease, whatever they might prove to be, were simply hazarded in view of the necessity of relieving the patient of a number of intolerable symptoms.

My first case was operated upon as long ago as November 29, 1892; my fifth, upon April 1, 1897. The complete and permanent disappearance of albumin and casts from the urine, and the restoration to perfect and enduring health of three of the five patients, led me to advise bilateral nephropexy in my sixth patient, a sufferer from chronic Bright's disease complicated with movable kidneys, mainly with the object of favorably influencing the chronic nephritis.

This operation, performed on January 10, 1898, constitutes the first operation ever undertaken upon the kidneys with the deliberate purpose of curing chronic Bright's disease, and in so far

marks a period in the history of the affection. As a result of the operation the patient was radically cured of her chronic Bright's disease, and remains so to this day.

Encouraged by the permanence of the cures of chronic nephritis in these earlier cases, I have, during recent years, performed nephropexy by preference upon patients suffering from chronic Bright's disease. This may account for the fact that among the 191 patients upon whom I have performed nephropexy there were no less than sixteen sufferers from chronic nephritis. The results, as will be detailed further on, proved gratifying beyond all expectation. As none of the patients after operation received any further treatment for their chronic Bright's disease, the conclusion became inevitable that the cures and improvement obtained with practical uniformity must be ascribed to the operation itself.

Gradually the idea dawned upon me that surgical procedures, which led to a cure of chronic nephritis in kidneys that were movable, would be even more likely to prove curative when applied to kidneys not suffering from displacement. For a while the conception that the cure of the chronic Bright's disease was due to the correction of the displacement of the kidney by nephropexy stood in the way of the development of the idea. It was not until three secondary operations upon kidneys which had been anchored some time previously, demonstrated to me what I now believe to be the essential conditions underlying the cure of chronic Bright's disease by operation, that I saw my way clearly in the matter.

The result of this study and interpretation of my accumulating experience was embodied in the formal proposition, advanced in the *Medical Record* of May 4, 1901, page 691, to treat all cases of chronic Bright's disease surgically. The principles underlying the cure of chronic nephritis by operation, and the method of operation to be followed in carrying these principles into effect, were also indicated. A promise was likewise implied to discuss the subject in a fuller and more formal manner as soon as certain investigations then pending were completed. In fulfillment of this promise the present paper is presented.

I will first outline, in tabular form, the essential points in the histories of all the cases of chronic Bright's disease which I have treated by operation, including, for the sake of completeness, the six cases already published. The analysis of this table will serve

as a basis for some deductions and general considerations to follow.*

In addition to the eighteen cases detailed in the table, I performed, on December 3, 1901, decapsulation of both kidneys on a woman of forty-three, referred to me from the First Medical Division of St. Francis Hospital, by Dr. Fritz Schwyzer, Attending Physician. A brother of the patient died of chronic Bright's disease. Patient herself seems to have suffered from chronic Bright's disease and cardiac derangement for the past two years. At the time of operation she had an extreme hypertrophy of the heart, with a mitral systolic and a mitral regurgitant murmur. Operation disclosed far advanced chronic interstitial nephritis, both kidneys being granular and shrunk to half their normal size. At the present writing, December 10, 1901, the patient's general condition and the improvement in the work performed by the kidneys are both perfectly satisfactory. On account of the short period of observation I have not included the case in the table.†

All of my eighteen patients were women, whose ages, varying between nineteen and forty-five years, averaged thirty and one-half years.

Cases of chronic Bright's disease only are included in the table. I have operated a few times upon kidneys affected with acute Bright's disease, and quite a number of times upon kidneys the seat of well-marked congestion, either acute or chronic, and, with one exception, always with good results. Such operations and such results, however, prove little or nothing, the tendency of acute nephritis, in the vast majority of cases, being toward spontaneous resolution or cure. It is only when Bright's disease has become chronic that it is considered incurable.

The classification of chronic Bright's disease according to the pathological conditions found in the kidney varies greatly with different authorities. Parenchymatous nephritis, or inflammation of the secreting structures, the tubules and glomeruli of the kidney, and interstitial nephritis, or inflammation of the renal connective tissue, form the two basic pathological entities upon which

*The eighteen cases included in the table of the original article are detailed in full, with the results carried to date of publication, as cases No. 1 to 18, both inclusive, on pages 148 to 185. The reproduction of the original table is thereby rendered unnecessary.

†For further history of the patient and for final result, consult Case No. 19, page 185.

all agree. Confusion in the further elaboration of the subject arises chiefly from the fact that neither of the two conditions ever exists absolutely by itself; *i. e.*, one variety of inflammation is never present without some admixture, greater or less, of the other. The variations in degree of each, in which parenchymatous and interstitial nephritis are found associated, are almost infinite, and explain the luxuriant abundance of classifications.

A practical division or classification, in the writer's opinion, is to designate as interstitial nephritis those cases in which the gross evidences of inflammation of the connective tissue of the kidney predominate; as parenchymatous nephritis, those in which involvement of the secretory apparatus forms the salient feature; and as diffuse nephritis, those inflammations of the kidney characterized by implication, in fairly equal degree, of both the parenchyma and the connective tissue of the organ. The diagnosis of these three varieties of chronic nephritis upon the living kidney, when exposed during operation, is easy after some experience, pathological changes being more readily appreciated with the blood circulating through the organ than they are after death.

Of the eighteen patients with chronic Bright's disease operated upon by the writer, five had right chronic interstitial nephritis; four had left chronic interstitial nephritis; four had right and left chronic interstitial nephritis; two had right and left chronic parenchymatous nephritis; three had right and left chronic diffuse nephritis.

In fourteen of the eighteen cases both kidneys were operated upon; in twelve instances at one sitting, and twice at two sittings. In four patients, operation was performed on one kidney only, in every instance the right.

Of the four patients whose right kidney alone was operated upon, two have recovered complete and lasting health. It may be taken for granted, therefore, that their left kidneys were, at the time of operation, as they are now, in perfect health. A third patient upon whom I performed right nephropexy disappeared from observation soon after operation; the condition of her left kidney must remain a matter of conjecture. The fourth patient, finally, whose diseased right kidney I operated upon, had her left kidney removed by another surgeon within three years after my operation on the right. In this case the left kidney was presumably diseased at the time I operated upon the right.

Embodying these conclusions with the statements contained in the table, we find that the left kidney alone was affected by chronic Bright's disease in four cases, the right alone in four cases, and both kidneys in nine cases, while in one case the unilateral or bilateral nature of the disease remains undetermined. In other words, the chronic nephritis affected both organs in nine cases, and one kidney only in eight cases, one case remaining doubtful.

In six of the eight cases in which chronic Bright's disease is recorded as unilateral, the healthy condition of the other kidney was verified at operation, when both kidneys were brought out of the wound for careful and critical examination. It cannot be denied that, in some instances at least, microscopical examination of a kidney classed as healthy might have revealed evidences of incipient changes of an inflammatory character; to the unaided sight, however, and to the touch, the organ was healthy.

The fact that chronic Bright's disease may be unilateral in one-half, or nearly one-half, of a series of eighteen cases may come as a matter of surprise to many of my readers, as, indeed, it proved a revelation to the writer. The fact, however, well explains the chronic course of many cases of Bright's disease, and the comparatively little disturbance of health the disease sometimes occasions. The healthy kidney simply performs the eliminative work of both kidneys, and the toxæmic symptoms of uræmia are not manifested. In this regard, patients with Bright's disease affecting one kidney only are on a par with patients whose one kidney has been removed. Gradually, however, but none the less surely, in patients with unilateral Bright's disease the steady loss of albumin through the affected kidney tells upon and undermines the general health, and leads, although in many cases only after the lapse of years, to a fatal issue. Probably, also, toward the end, the other kidney generally becomes involved, thus explaining the very great preponderance of bilateral over unilateral chronic Bright's disease as found in the dead house.

The diagnosis of chronic Bright's disease in the above eighteen cases was based upon the previous history of the patient, upon the chemical and microscopical examination of the urine, and lastly, upon the critical test of actual inspection and palpation of the kidney at the time of operation. This evidence was supplemented in two cases by microscopical examination of a small piece of kidney tissue removed at operation.

In nine of the eighteen cases the existence of chronic Bright's disease was discovered on examination of the urine but a short time before operation, just as the first intimation of kidney disease often received by a man who considers himself in perfect health is the rejection of his application for a life-insurance policy, or for additional insurance in a company which at one time had considered him a good risk. Closer investigation of the histories of these nine patients, however, always revealed the previous existence of some indications, more or less pronounced in different cases, of deranged function of the kidneys. The other nine patients were fully aware of the existence of chronic Bright's disease in their persons for periods varying from several months to over six years preceding operation. In their cases the well-known severer symptoms of blood deterioration, dropsy, and uræmia were present in varying degrees and combination. The periods above given indicate the time elapsed between the first discovery of albumin and casts in the urine and the date of operation; how long chronic Bright's disease existed in each case before it was revealed by urinary examination it is, of course, impossible to say.

The urine examination, either establishing or confirming the diagnosis of chronic Bright's disease prior to operation, were, in the last fifteen of my eighteen cases, all personally made by Dr. Henry T. Brooks, Professor of Pathology in the New York Post-Graduate Medical School and Hospital. In a number of these fifteen patients the diagnosis had already been reached, after examination of the urine, by the patient's family physician. I preferred, however, to have the diagnosis verified and confirmed in each instance by one or several examinations of the urine, made by such an unquestioned authority as Professor Brooks. My first three patients were operated upon prior to my acquaintance with the latter gentleman. In my second patient, Dr. R. S. Wiener, the patient's physician, stands as sponsor for the uranalysis-diagnosis of chronic Bright's disease; in my first and third cases the urinary examinations preceding operation were made by my house surgeon and myself.

The evidences of chronic Bright's disease, as revealed by operation, clinched the diagnosis beyond peradventure in all of the cases. They were, in each instance, so positive and pronounced as to leave no room for doubt. The kidney, in all of my operations

but one, was invariably delivered upon the skin of the back for examination and operation. In the one exception the right kidney was so delivered, but it was found impossible to deliver the left kidney, operation upon which was performed in the depths of the wound. This delivery of the kidney enabled me to demonstrate to all witnesses of each operation the visible changes produced by chronic Bright's disease in the particular kidney under operation—the adherent capsule, nodulation, granular condition of the sub-capsular surface, shrinking, unequal contraction, and occasional cyst formation of chronic interstitial nephritis; the enlargement, cloudy swelling, mottling, and discolorations due to circulatory and degenerative changes of chronic parenchymatous nephritis; the thickening, general or localized, of the capsule proper of the kidney, and the secondary inflammatory changes in the perirenal fat, common to both varieties of chronic Bright's disease. The variations in the density and hardness of the kidney substance, often varying widely in different parts of the same organ, could, for obvious reasons connected with asepsis, be appreciated only by myself and my assistant at the operation. With a personal experience of more than three hundred kidney operations available for comparison, I now find no difficulty in promptly determining by inspection and palpation whether a given living kidney before me for operation is, or is not, affected with chronic Bright's disease. It is for this reason, probably, that in only one instance have I felt myself justified in exsecting a small bit of kidney tissue at operation for the purpose of microscopical examination. The justifiability of deliberately depriving a patient, except under very exceptional and urgent indications, of even the minutest part of such an important excretory organ as the kidney, knowing that the defect can be made good only by compensatory hypertrophy, never by new formation of kidney tissue, is, to my mind, a subject of grave doubt. In the one instance referred to, the right kidney, as it lay before me at operation, delivered and stripped of its capsule proper, presented over its entire surface such an even and regular granular condition that a diffuse tuberculosis was suspected, which suspicion, if verified, would, of course, call for excision of the diseased organ. A minute piece of the kidney substance was exsected and forthwith taken to Dr. Brooks' laboratory. The right kidney was then replaced in the body, and the left kidney, which showed clearly the evidences of chronic Bright's

disease, was operated upon, while Professor Brooks made examination of frozen sections of the piece of right kidney sent him. In fifteen minutes the report came from Dr. Brooks: "Chronic interstitial nephritis; no tuberculosis;" whereupon nephropexy upon both kidneys was completed. In one other patient, while performing total excision of the renal capsule proper, a small bit of kidney tissue came away with the capsule. Examination of this tissue was made by Professor Brooks, who found "chronic diffuse nephritis, with foci of sepsis in some of the tubules."

Right nephropexy was performed upon four, and bilateral nephropexy upon twelve, of my eighteen patients. Extensive denudation of the kidney cortex, by stripping off the capsule proper, so as to lay bare about one-half of the surface of the kidney, was a feature of all these nephropexies. This fact, in my opinion, has a distinct bearing upon the results, as will be explained further on. In three or four instances, renal cysts of various sizes were punctured and evacuated prior to anchoring the kidney.

Upon my last two patients I performed total excision of the renal capsule proper with the sole and specific object of bringing about a cure of chronic Bright's disease. In one of the two patients both kidneys were operated upon at the same sitting. The other patient had but one kidney, as I had been compelled to remove the septic right kidney some months prior to performing excision of the capsule proper of the left kidney.

Excision of the renal capsule proper is performed as follows: The patient is placed prone upon the table, with the author's kidney air cushion underlying and supporting the abdomen. Both kidneys are thus rendered accessible to operation without the necessity of changing the patient's position. An incision is carried from the twelfth rib to the crest of the ilium, along the outer margin of the erector spinæ, without opening the sheath of that muscle. The fibers of the latissimus dorsi muscle are bluntly separated in the direction of their course, without cutting. The iliohypogastric nerve is sought for and drawn to one side or other, out of the way of harm. Division of the transversalis fascia exposes the perirenal fat. This is divided over the convexity of the kidney until the capsule proper is reached. The fatty capsule is now bluntly separated everywhere from the capsule proper, the dissection advancing on either aspect and around both poles of the kidney until the pelvis of the kidney is reached. Now and then the

fatty capsule may be found so thickened and adherent, as the result of chronic perinephritis, that the scissors or knife may be required to separate it from the capsule proper. The kidney, with its capsule proper, is next lifted from its fatty capsule bed, and, if possible, delivered through the wound. The capsule proper is divided on a director along the entire length of the convex external border of the kidney and clean around the extremity of either pole. Each half of the capsule proper is in turn stripped from the kidney and reflected toward the pelvis until the entire surface of the kidney lies raw and denuded before the operator. In separating the capsule proper from the kidney, care must be exercised not to break or tear away parts of the kidney, which is often both very friable and very firmly connected with its capsule proper. The stripped-off capsule proper is next cut away entirely, close to its junction with the pelvis of the kidney, and removed. Delivery of the kidney makes this otherwise difficult work easy. If the kidney cannot be delivered, the capsule proper must be entirely peeled off the kidney by the fingers in the bottom of the wound, and excised as far as possible, any remaining portion being simply reflected backward around the root of the kidney, where it will curl up and stay. The kidney is dropped back into its fatty bed and the external incision is closed. Drainage, except when the parts are extremely œdematous, is dispensed with. After both kidneys have been thus operated upon the dressings are applied and the patient is put to bed.

The safe performance of decapsulation of both kidneys at one sitting presupposes familiarity with kidney work on the part of the surgeon. A surgeon unfamiliar with kidney operations, and consequently either too slow or too hesitant and timid, is not the right man in the right place in operating for chronic Bright's disease.

Excision of the renal capsule proper accurately defines the operation. It is, however, a long name, and either renal decapsulation, renal decortication, renal denudation, nephrocapsectomy or nephrocapsacectomy. (*νεφρος*, a kidney; *καψη* or *καψακιον*, a capsule; *εκτομη*, a cutting out, or excision), may, should the operation survive, come to be preferred.

Ether was the anæsthetic employed in all of my operations but one, on these eighteen sufferers from chronic Bright's disease. Upon many of them I performed operations additional to the

kidney operation, always under ether, and in not one instance was the slightest untoward effect observed. Case No. 18 was operated upon under combined nitrous oxide and oxygen anæsthesia conducted by Dr. Thomas L. Bennett. I see no good reason why any surgeon should not use, in his operations upon the kidney, the same anæsthetic to which he is accustomed in his operative work generally. Personally, I would prefer, especially in cases of far advanced Bright's disease, nitrous oxide and oxygen, provided I could always command the services of an expert like Dr. Bennett to administer the combined gases; otherwise I would choose ether. My third choice would be spinal cocaine anæsthesia, which I have found particularly well adapted for work upon the kidneys.

There has thus far been no mortality in my operations upon the kidneys of patients affected with chronic Bright's disease. All of my patients recovered from the operation and, as far as my knowledge goes, all but two are alive to-day. One of the two died after an operation for ruptured tubal pregnancy, performed by another surgeon, exactly one year after my operation on her kidneys, the other succumbed to a hysterectomy, also performed by another surgeon, eight years after my operation on her right kidney.

That this favorable showing as regards the mortality will continue can scarcely be expected when we consider the widespread changes in the system produced by chronic Bright's disease, and the operative risk which the patient, in view of the hopeless nature of his illness, is justified in assuming. My patient, No. 17, came to the operating table in a state of impending dissolution, with the full understanding on the part of herself, her family, her physicians, and myself that she might die on the table. She was literally snatched from the jaws of death by the operation.

A combination of fortuitous circumstances, largely a matter of mere luck, prevented almost certain death during and after operation in several patients having the operation under consideration.

A colleague of high standing, a professor at one of our medical schools and attending physician to a large general hospital, was consulted during the past summer by a patient of thirteen suffering from chronic Bright's disease dating, to the doctor's personal knowledge, from an attack of scarlet fever at the age of five, and existing continuously since that time. At the time of

consultation the patient was in much better condition than usual. The doctor, who was familiar with my work, advised him to place himself under my care for operation on both kidneys; but in view of his good general condition, the hot weather, and the fact that the doctor was about to leave town for a month's vacation, thought that an additional four weeks, in a disease which had already lasted eight years, would make no material difference. The operation was, therefore, set down for a date within a few days after the doctor's return. Two and a half weeks following the consultation the doctor received word from his substitute in town that the boy had died in uræmic coma and convulsions. The comment made by the doctor was that we can never tell when a patient with chronic Bright's disease will die. A second patient, with chronic Bright's disease and extensive secondary vascular changes, died suddenly of heart failure four days after operation was first proposed to him, and while deliberating the proposition. A third patient, an otherwise promising case in a man of thirty, had just been purged and sweated out of the uræmic state by his physicians, and was quite ready for operation, when a new feature in his case, a pericardial effusion, put in an appearance. Beyond all reasonable doubt, operation would not have prevented the death of the first two of these patients, and would have caused the death of the third.

The results of my operations for chronic Bright's disease, as far as a diligent and persistent search has enabled me to obtain them in each case, are presented in the table. Before drawing deductions from an analysis of this table, it will be necessary, in the first place, to throw out three cases (Nos. 2, 9, and 10) which disappeared from observation in from four to six weeks after operation, and whose further and present whereabouts cannot be ascertained.

Among the nine patients operated upon a year or longer ago, Case No. 3 represents the only failure radically to cure the chronic Bright's disease existing at the time of operation. Operation was performed upon the right kidney in May, 1893. The kidney was found extensively diseased, its surfaces being nodular, and the capsule proper irregularly thickened and very adherent, as a result of inflammatory changes. The kidney contained a cyst, four centimeters in diameter, the contents of which, a turbid serum, were evacuated by incision through the kidney substance. The wound

of the kidney was closed by a running catgut suture, and the kidney was anchored in the usual way. Some three years after my operation on the right kidney, another surgeon removed the left kidney. For five years thereafter the patient lived with only the right kidney, and at the end of that time this kidney, although, according to her physician's statement, still the seat of inflammation, was apparently in sufficiently good condition to warrant hysterectomy at the hands of a third surgeon, ten days after which last operation she died. It is difficult to understand how she managed to live for eight years after my original operation, five of them with only the kidney operated upon by me, unless that kidney had considerably improved over the condition above described as found at operation.

Four of my cases (Nos. 13 to 16, inclusively) were operated upon but a little over six months ago. In two of them the urine is at present free from albumin and casts; it is yet, however, too early to speak of a permanent cure. One of the remaining two shows great improvement, and in the urine of the other, according to Professor Brooks, there is at present only very slight evidence of renal disturbance. These four cases are encouraging, but the period of observation after operation is considered too brief to speak either of permanent cure or permanent improvement.

The time elapsed since operation in my last two cases (Nos. 17 and 18) is as yet too short to warrant deductions of any great or very legitimate value. They present features of such an interesting character, however, that I cannot refrain from giving them somewhat in detail.

CASE No. 17.—Mrs. M. S., aged thirty-three, mother of one child. Dr. T. W. Vardon, of Galt, Ontario, Canada, her family physician, to whose kindness I am greatly indebted for the history of the patient prior and subsequent to operation, states that albumin was first found in the urine in 1896. During and since her only pregnancy, which terminated on May 5, 1899, with the birth of a child at term, she has suffered continuously from chronic Bright's disease, which ran its usual downward course, in spite of all the care in the way of nursing and treatment which the patient's fortunate situation in life enabled her to command. On about September 20, 1901, she was seen by Dr. H. Howitt, of Guelph, Ontario, Canada, in consultation with Dr. Vardon. Dr. Howitt,

whose acquaintance it was my good fortune to make on the occasion of a recent visit to Canada, and to whom I had detailed somewhat my experience in the operative treatment of chronic Bright's disease, had the courage to assume the responsibility of recommending operation at my hands. In a letter from Dr. Vardon, dated September 23, 1901, the patient's condition, at that time, is described substantially as follows: "The patient passes twenty-seven ounces (810 c.c.) of urine per day; specific gravity, 1.020; contains 50 to 70 per cent. of albumin and abundant casts. Dropsy of lower extremities; small accumulation of fluid in abdomen. Pulse, 100; temperature, 99° to 101° F. Sits up two to three hours per day, and can walk a little. Swelling of face at times, but no headache for several weeks past." There was some delay in acting upon Dr. Howitt's advice, during which the patient sank rapidly in spite of high pressure treatment. The quantity of urine steadily diminished until, for about two weeks preceding operation, only ten to twelve ounces (300 to 360 c.c.) were passed in the twenty-four hours. On October 12, the distended skin of both lower extremities was incised at several places to permit of the escape of the dropsical effusion, and on October 15, two and a half gallons (9600 c.c.) of fluid were withdrawn from the abdomen by the aspirator. These measures were advised by Dr. Howitt, and carried out by Dr. Vardon, with a view to preparing the patient for operation.

I saw the patient for the first time on the day of operation, October 17, 1901. Her face presented the characteristic pallor and puffiness of advanced Bright's disease; she was completely water-logged, and unable to breathe in the recumbent posture, being compelled to sit bolt upright in bed, day and night. Pulse, 120, soft and compressible; temperature, a trifle above 100° F.; respirations, 30 per minute; œdema of the entire lower lobes of both lungs. It was very evident that her end was fast approaching. With some misgivings as to the chances of the patient surviving it, operation was undertaken at the Galt General Hospital, with the kind and efficient assistance of Drs. Howitt and Vardon, Dr. J. S. Wardlaw skilfully administering ether. The bleeding was minimal, but water poured from all the tissues cut, and operative procedures were difficult on account of the depth of the wound caused by the œdematous condition of all the parts overlying the kidneys. Excision of the capsule proper of both kidneys, after the

method already described, was performed as expeditiously as possible. Both kidneys were considerably enlarged and succulent, and presented all the characteristics of far-advanced chronic parenchymatous nephritis, forming typical examples of the so-called large, white kidney. The patient was returned to her room forty-five minutes after leaving it; that length of time sufficing for inducing anæsthesia, cleansing the operative field, completing operation upon both kidneys, and applying the dressings. A few strands of silkworm gut were placed, chiefly to drain off serum, and the wounds were closed for primary union. The strands were withdrawn by Dr. Vardon a few days later, and both incisions healed by first intention.

For a few days after operation her condition continued critical, or, rather, grew more so, a temperature of 103.8° F., with a pulse of 132, and respirations numbering 42 to the minute being reached on the fifth day. After that there was slow but continuous improvement in every symptom. The daily amount of urine for ten days following operation varied between two and fifteen ounces (60 and 450 c.c.), with a total of ninety-two ounces (2760 c.c.), and two lost voidings, for the ten days. From the eleventh day on, the daily quantity of urine steadily increased, until it reached forty-four ounces (1320 c.c.) on the twentieth, and high-water mark, fifty-five ounces (1650 c.c.) on the thirty-sixth day after operation. The facts with regard to the urine are of special interest, as sustaining my conception of the way in which my operation acts in bringing about this good result, a subject which will be again referred to later on.

At date of the last report received from Dr. Vardon, December 1, 1901, the general dropsy and the pulmonary œdema had gradually and entirely disappeared. There was, however, a slight tendency to reaccumulation of fluid in the abdomen, a fact which suggests the possibility of a cirrhosis of the liver complicating the chronic Bright's disease.

"Mrs. S. is able to rest and sleep in the horizontal position, without even a pillow, and without the least distress. She is gaining in strength, has no pain in the head or other parts of the body, feels, eats, and sleeps well, and is getting a better color. I hope to get her up this week."

The amount of albumin in the urine is at present 40 to 50 per cent., as against 50 to 70 per cent. prior to operation; casts of all

kinds, large and small hyaline, coarsely granular, epithelial, and mixed, are present in great abundance. The quantity of urine voided during the thirty days of November amounted to 1,300 ounces (39000 c.c.), of which 390 (11700 c.c.) were passed in the first ten days, 444 (13320 c.c.) in the second ten days, and 466 (13980 c.c.) in the last ten days of the month. The specific gravity has varied between 1,014 and 1,025, but the percentage of urea is still rather low. Unfortunately, an acute right pyelitis developed on December 5, the outcome of which, at the present writing, December 10, is still in doubt.*

CASE No. 18.—Mrs. C. B., thirty-nine years of age, mother of four children, suffered from nephritis and a fatty heart during her last pregnancy, which terminated, on February 12, 1901, with the birth of a living child at term. The first two weeks of the puerperium were uneventful, except for the persistence of nephritis. Then symptoms of mild sepsis developed, and an examination revealed a large tumor, sensitive to pressure, to the right of the uterus. During the subsequent progress of the case the sepsis increased, while the tumor-mass grew smaller and smaller with progressive involution of the uterus. On March 14, 1901, I first saw the patient at her home in Monsey, N. Y., in consultation with her physician, Dr. A. O. Bogert, of Spring Valley, N. Y., to whom I am indebted for the above history, as well as for devoted and intelligent care and aid in the subsequent management of the case. Indeed, I am entirely within the bounds of truth when I state that the patient owes her life to the unremitting watchfulness and the skill and judgment displayed by both Dr. Bogert and her nurse, Miss Anna L. Merritt, in tiding her over the many desperate crises in the further progress of her illness.

On the occasion of my first visit the patient was profoundly septic, and examination showed a tumor, nine to ten centimeters in diameter, to the right of the uterus, and intimately connected by a broad pedicle with the body of that organ just above its junction with the cervix. The flabby uterus, measuring twelve to thirteen centimeters in depth, was crowded to the left and backward by the tumor; its interior was clean, and the lochia were sweet.

*For further history of the patient and final outcome, consult Case No. 17, page 179.

A diagnosis was made of uterine fibroma undergoing necrosis or gangrene and inducing general sepsis, and removal of the tumor was advised as affording the only possibility of saving her life. The advice was accepted, and the operation was performed under ether anæsthesia at the patient's home, on March 17, 1901. The uterus, containing the sloughing fibroid above mentioned, together with a number of younger fibromata, was removed in one piece with both tubes and ovaries by abdominal section. The abdominal incision was closed, and free drainage was established in the direction of and through the vagina.

The patient was returned to bed in a state of profound collapse, from which she was only just beginning to rally, when, on the day following operation, a double pneumonia of the most severe type developed. The pneumonia ran a stormy course of ten days, during which the temperature reached 104° F., the pulse 170, and the respirations 67 to the minute. During all this time her life hung on a thread, and the heart was kept going only by stimulation to the limit, no less than 86 hypodermics of caffeine, glonoin, camphor, and other cardiac excitants being administered within a week. The fact that for two weeks the fæces and urine were passed involuntarily and unconsciously will convey some idea of the low state of the patient.

During convalescence from the pneumonia a urinary fistula developed, which a cystoscopic examination showed to be due to a small slough of the bladder wall just above the orifice of the right ureter. The abdominal wound, which had healed by primary union, also broke down as the result of a pneumococcus infection.

For two weeks after resolution of the pneumonia the patient did fairly well, though her condition was not entirely satisfying. An attack of acute infection of the right kidney then developed, characterized by a painful swelling of the right kidney, with pyuria and a decided increase in the amount of albumin and the number of casts habitually present in the urine, followed by symptoms of secondary general sepsis with a temperature of 104° F. and a pulse rate of 120. On April 24, Professor A. Caillé saw the patient in consultation with Dr. Bogert and myself. We all agreed that infection of the right kidney was at the bottom of her present troubles, and Professor Caillé was inclined to regard it as a late pneumococcus infection. Removal of the right kidney was discussed at the time, but the patient's low condition, and the

rapid abatement of the acute symptoms on the following day, led us to defer operation. During the months of May, June, and July, the patient had three exactly similar outbreaks of severe manifestations of infection of the right kidney, each attack lasting from eight to ten days. In the intervals between the attacks there was remission, but never complete disappearance of the septic symptoms. During the July attack, the temperature ran up to 105.5° F., with a pulse rate of 160, and the patient was prostrated to the verge of death. It was resolved to hazard a right nephrectomy as giving her the only chance, and a slim one at that, for life. The operation was performed under ether, at the patient's home, on July 9, 1901. The large right kidney, riddled with innumerable abscesses, and with its pelvis filled with pus, was removed and the wound dressed in twenty minutes, the necessity for haste being especially urgent. The patient bore the operation and rallied unexpectedly well.

Professor H. T. Brooks reported as follows upon the specimen: "Microscopic examination of sections made from kidney of Mrs. B. showed typical histological characteristics of multiple abscess. In the abscess areas there was found a thick bacillus, corresponding morphologically to a species of proteus, a class frequently responsible for suppurative nephritis."

Following the operation of removal of the septic right kidney there was a marvelous and rapid improvement in the patient's condition. The abdominal incision and the vesical fistula, which for over four months had refused to heal, closed spontaneously within ten days after operation. The lumbar operation wound which, on account of accidental contamination with pus from the kidney, had to be drained, was brought together a few days later for secondary union, and was firmly healed in less than three weeks after operation, at which time the patient left her bed. Appetite and strength rapidly returned; she gained thirteen pounds in weight, and gradually resumed her usual occupations, even coming to the city several times on visits. There was only one drawback to her happiness, and one source of uneasiness to her family and physicians—the persistence of albumin and casts, with small quantities of pus, in the urine. Professor Brooks called it chronic Bright's disease, with some insidious infection of the kidney.

As time wore on, the improvement in health ceased and the characteristic pallor, puffiness of the face, and œdema of the lower

extremities, due to chronic Bright's disease, came to the foreground. Her husband, who knew of my operations upon cases of chronic Bright's disease, asked that his wife be given any chance afforded by operation, and the patient concurred in the request.

On November 10, 1901, I performed excision of the capsule proper of the left kidney, at the home of the patient. Nitrous oxide and oxygen anæsthesia was skilfully induced and maintained throughout the operation by Dr. Bennett, who at both previous operations had administered the ether. The operation was completed in thirty-two minutes, the patient regaining full consciousness immediately thereafter. The wound healed by primary union throughout. The kidney acted well, the daily amount of urine passed during the first twelve days averaging no less than seventy-six ounces (2,280 c.c.), with an average specific gravity of 1.010—rather remarkable work for one kidney.

A minute piece of kidney tissue, which came away with the capsule proper, was sent for examination to Professor Brooks, who reports as follows: "Microscopic examination of the small piece of renal tissue removed from the kidney of Mrs. C. B. showed decided histologic evidence of multiple foci of nephritis of infectious (septic) type. As far as was possible to determine from the minute size of the cortical tissue received, these foci were confined to the areas corresponding to terminal arteries, and consequently had a wedge-shaped outline. In the diseased areas the tubules presented granular and partially disintegrated epithelia, often detached from the membrana propria, and the lumina were not infrequently occluded by polynuclear leucocytes (pus), fragmented epithelia, blood cells, and amorphous detritus. Some tubules were filled with dense hyaline material (casts)."

It will be seen from the above that the prognosis as regards the ultimate result in this case is unfavorable, owing to the presence of pus in the kidney. Thus far the infection has been more or less controlled by urotropin, which has been steadily administered for many months past. At the present writing, December 10, the patient is again out of doors, and is feeling perfectly well.*

Leaving out of consideration, for reasons already sufficiently detailed, these ten cases, we have left eight patients, observed

*For further history of the patient and the final result, consult Case No. 18, pages 179 to 185.

from one year to over eight years after operation, the further progress of whose cases and whose final conditions fully justify the title of this paper. These eight patients were all cured of their former chronic Bright's disease, and seven of them (Case 11 having meanwhile died an accidental death) remain so cured, as a result of operation on their kidney or kidneys, none of them having received further treatment of any kind after operation. They are free from all symptoms referable to the kidneys, and their urine remains permanently free of albumin and casts. My authority for the latter statement is Professor H. T. Brooks, who has made repeated examinations of the urine after operation in every case except one (Case No. 11), his examinations in six cases extending over a number of years.

Table II.

AUTHOR'S CASES OF CHRONIC BRIGHT'S DISEASE CURED BY OPERATION.

CASE NUMBER.	1	4	5	6	7	8	11	12	
Known existence of chronic Bright's disease prior to operation, expressed in months.	12	?	72	?	2	?	?	?	
Time from operation to final and permanent disappearance of albumin and casts from urine, in months.	2	4	12	1	5	4	?	2	Average for seven cases, $4\frac{1}{2}$ months.
Period of observation from operation to last examination of urine, in months.	100	70	55	45	33	31	12	12	Average for eight cases, $44\frac{3}{4}$ months.

Table II. presents at a glance the duration of chronic Bright's disease prior to operation, as far as known, in each case; the time elapsed between operation and the final and permanent disappearance of albumin and casts from the urine; and the period after operation at which the continued health of the kidneys was last verified by examination of the urine.

That chronic Bright's disease is curable by operation is demonstrated, I believe, beyond any legitimate doubt by the results obtained in these eight cases. The significance of this demonstration or proof becomes apparent when we consider both the wide prevalence of the disease and its inevitable tendency to a fatal termination, delayed though that termination may be, under any and all forms of treatment hitherto known.

Let it not be understood, however, that I entertain any enthusiastic hopes or expectations that chronic Bright's disease will be found to yield to surgical treatment in all cases and in all stages of the disease. When the patient is practically moribund, sufficient time may not be left for the circulatory changes in the kidneys, initiated by the operation, to produce any good results. I have already pointed out that the first beneficial effects of operation, as indicated by the increased flow of urine, do not appear before the tenth day. The manifold complications of the advanced stages of chronic Bright's disease, many of them in themselves necessarily fatal, will also stand in the way of our saving lives, even if we succeed in curing or improving the chronic Bright's disease. A number of these complications will, in addition, prove almost prohibitive to undertaking any operation whatsoever. The improvement noted after operation in some of the extremest and most desperate cases, for example, Nos. 14, 17, 18, is certainly most encouraging, and a final good result in any of these three cases will go far toward solving the problem of the limitations of my operation.

How does operation act in bringing about a cure or improvement of chronic Bright's disease? The answer to this question has, to my mind, been settled as a result of observations made during the course of three operations upon kidneys that had previously been operated upon, one by myself and two by other surgeons. In each instance nephropexy was the operation originally performed. At the second operation upon the same kidney the following conditions were noted as results of the first operation: First, the formation of strong connective-tissue adhesions or bands attaching the kidney to its surroundings. Secondly, the existence, in these connective-tissue adhesions or bands, of very large and numerous blood vessels running between the kidney and the adjacent tissues. This fact was forcibly brought home to my assistants and myself by the necessity of ligating artery after artery of considerable size, in dividing these adhesions. Thirdly, the predominance in number and size of the newly formed arteries over the newly formed veins. Fourthly, the significant fact that in all the arteries the direction of the blood stream was *toward* the kidney.

The conclusion which I had reached, that arterial hyperæmization of the kidney was the basic factor underlying the subsequent changes which resulted in a cure or improvement of chronic

Bright's disease after operation, was clinched when I casually happened across the following passage in E. Ziegler's "Text-Book of Special Pathological Anatomy," The Macmillan Company, 1897, page 909. Ziegler writes: "When a portion of the renal epithelium has been destroyed by a morbid process which spares the interstitial structures, the loss is in general soon made good by regenerative proliferation of the remainder; and if the circulation is adequately maintained the new epithelium presently becomes capable of carrying on the secretory function."

The increased and adequately maintained blood supply to the kidney established by my operation leads, most probably, to gradual absorption of the interstitial or intertubular inflammatory products and exudates, thus freeing the tubules and glomeruli from external compression, constriction, and distortion, and permitting the re-establishment in them of a normal circulation. The result of this improved circulation in and between the tubules and glomeruli is the regenerative production of new epithelium capable of carrying on the secretory function.

That the cure of chronic Bright's disease is only initiated by operation, and is thereafter only gradual and progressive, is self-evident from the above considerations. The very fact that final and permanent disappearance of albumin and casts from the urine required from one to as long as twelve months after operation indicates this, and at the same time furnishes proof, if such be needed, of the correctness of my explanation of the manner in which operation acts in bringing about a cure of chronic Bright's disease. It is not a question of the simple relief of renal tension, the beneficial effects of which in acute conditions of the kidney, described by Harrison in 1896, have since been noted by an increasing number of surgeons. In these acute cases the tight fit of the capsule proper is manifest, and the kidney bulges at once through an incision or puncture made through the capsule. In chronic Bright's disease, on the contrary, the capsule proper, although it may be abnormally adherent to the kidney, never compresses the latter, and may even sit loosely upon it. Moreover, on cutting the capsule proper, the edges of the incision do not gap. It is interesting to note that Harrison, in his very recent communication, thinks that puncture to relieve renal tension in acute cases of nephritis may prevent them from advancing to the chronic stage.

Excision of the renal capsule proper, or renal decapsulation, is

not in itself a new operation. It has been employed by Rose, quoted by Wolff, Ferguson, and occasionally by the writer, as part of the technics of nephropexy. The proposition, however, to treat chronic Bright's disease by bilateral renal decapsulation as a basic operation is original with the writer.

As already stated, my first five operations upon kidneys the seat of chronic Bright's disease were simply nephropexies performed with the object of getting rid of severe symptoms due to mobility of the kidney or kidneys. The observation that the chronic Bright's disease in three of them was cured as a result of the operation led to the further evolution of the subject as presented in this paper. One practically identical observation is recorded by Wolff as following a nephropexy performed by Rose. At the operation the kidney was found to be the seat of well-marked chronic nephritis, while examination of the urine made several years later showed both kidneys to be healthy.* No practical deduction, however, was drawn by either Wolff or Rose from this observation. Somewhat similar observations are recorded by Newman and Ferguson. Newman performed nephropexy in two cases of movable kidney with intermittent hydronephrosis, in which casts appeared in the urine during the attacks, and found that the casts disappeared permanently after operation. Ferguson operated upon two kidneys, in the first of which "no diagnosis was made, but a stone in the kidney was suspected and exploration advised," while in the second, operation was undertaken upon the diagnosis of "septic kidney." On operation, both proved to be uncomplicated cases of acute or subacute nephritis. Nephropexy was performed upon both patients, and was followed by the prompt disappearance of albumin and casts from the urine.

Ferguson's two patients were operated upon early in 1899. As a result of the outcome in both, though after a period of observation extending over a few months only, Ferguson, in June, 1899, seconded my proposition, made in April, 1899, to treat chronic Bright's disease surgically. Neither Ferguson's paper nor my own, however, has received much attention, and no other publications of the same tenor have come to my knowledge.

In each of the cases cited from Harrison, Wolff, Newman and Ferguson, one kidney only was operated upon, while in the large

*For correction of this statement, which W. Karo has shown to be erroneous, consult page 37.

majority of my own cases, operation was performed on both kidneys. Harrison, indeed, believes that operation on one kidney may relieve the other. His observations, however, on which this opinion is based do not include cases of chronic Bright's disease.

We have seen that renal decapsulation is performed with the object in view of creating new and liberal supplies of arterial blood to the diseased kidney. How does the operation effect this object, and can the same object be effected in a better way? In answer to this question it is simply necessary to point out that both the denuded kidney and its fatty capsule are most liberally supplied with blood vessels; that both are brought together by my operation over the whole extent of the surface of the kidney; and that the necessary result must be the formation, on the most extensive scale possible, of new vascular connections between the kidney and the fatty capsule embracing it. The fibrous capsule proper forms an almost impenetrable barrier to the passage of blood vessels between the kidney and its fatty capsule, as I have had abundant opportunity to verify in my operations upon the kidney. It is not at all uncommon, for instance, in operating upon a kidney to find the blood vessels of the fatty capsule greatly increased both in number and size, generally as the result of a perinephritis. Now and then a large artery of the fatty capsule will be seen entering and apparently penetrating the capsule proper. On raising the capsule proper from the kidney, however, the artery is not severed and further investigation shows that it does not enter the kidney, but is lost upon and in the capsule proper, which has thus intercepted a possible new blood supply to the kidney.

Practical clinical experience would seem to point to the same conclusions. In all the nephropexies upon patients suffering from Bright's disease, in which a cure or disappearance of the nephritis was noted as one result of the operation, in the case of Rose, reported by Wolff, in Ferguson's two cases, and in my own above listed, extensive or entire denudation or decapsulation of the kidney formed one of the features of the operation. Newman's two cases are not included, first, because they were cases of hydronephrosis, not of chronic Bright's disease, and secondly, because his technics are not specified in reporting the operations and their results.

Cirrhosis of the liver, chronic interstitial hepatitis, one of the most frequent complications of chronic Bright's disease, has within

the past three years come within the domain of surgery. The most modern development of the operation for cirrhosis of the liver embraces, as essential features, both the establishment of anastomosis between the omentum and the anterior abdominal wall, and the creation of widespread adhesions between the upper surface of the liver and the diaphragm. Both operations are performed with the object in view of relieving the portal circulation, and of thus removing one of the symptoms of the disease, the ascites. The writer believes that the future will show that whereas the anastomosis between the vessels of the omentum and abdominal wall will relieve the ascites, the establishment of broad adhesions and extensive vascular anastomosis between the upper surface of the liver and the diaphragm will accomplish more than this. It will probably lead to an amelioration, and possibly, in some instances, to a cure of the cirrhosis itself, by establishing an increased arterial hyperæmization of the liver on the same principles which underlie my operation for the cure of chronic Bright's disease. There is no good reason, at the present day, why a sufferer from both chronic Bright's disease and cirrhosis of the liver should not have the chance of life afforded by operation for both conditions. The day is not far distant, I believe, when we will read of operation upon both kidneys for chronic Bright's disease, and the operations above outlined for cirrhosis of the liver, as all performed at one sitting on the same patient. I see no reason, indeed, why they could not all be performed simultaneously through one and the same incision of the anterior abdominal wall.

Returning from this digression to the consideration of our subject proper, the cure of chronic Bright's disease by operation, I think we have shown, in the first place, that chronic Bright's disease is curable by operation, and in the second place, that the present state of our knowledge does not warrant us in accurately defining the limits beyond which operation can no longer avail. As the result of my experience thus far, and from my present standpoint, I am prepared to operate upon any patient with chronic Bright's disease who has no incurable complication, or one absolutely forbidding the administration of an anæsthetic, and whose probable expectation of life, without operation, is not less than a month. The latter proviso is made in view of the fact that the beneficial effects of the operation can scarcely become operative to any extent in less than about ten days.

The above conclusions are reached from my standpoint as a surgeon. From the patient's viewpoint the facts must be recognized that the treatment of chronic Bright's disease by operation forms an entirely new departure; that experience in this direction is limited to that detailed in this paper; that it will require time, and probably considerable time, before a larger and more definite experience becomes available; that no individual present sufferer from chronic Bright's disease can be certain of living to see an accumulation of such experience sufficient finally to settle the question, and that by delay he may imperil whatever chances he may at present have of being cured by operation.

In deciding for operation it must be remembered that renal decapsulation is not directly and forthwith curative of chronic Bright's disease, but that it only leads to a cure or improvement of the disease by establishing circulatory conditions essential to such cure or improvement. The attainment of permanent cure, or of the full measure of improvement possible in a given case, will necessarily require time, during which the patient will, especially in the severer cases, stand in need of the further guidance and treatment of his family physician. The latter will come to regard the operation as one of the measures, albeit the most essential one, necessary to enable him to cope successfully with a case of chronic Bright's disease.

QUESTIONS OF PRIORITY IN THE SURGICAL TREATMENT OF CHRONIC BRIGHT'S DISEASE.

BY GEORGE M. EDEBOHLS, M.D.

(Reprinted from the *Medical Record*, April 26, 1902).

Literature Under Discussion Arranged in Chronological Order of Publication.

1. HARRISON, R.—“A contribution to the study of some forms of albuminuria associated with kidney tension and their treatment.”—*Lancet*, London, January 4, 1896, pps. 18-20.

2. NEWMAN, D.—“Intermittent hydronephrosis and transient albuminuria in cases of movable kidney.”—*Lancet*, London, January 18, 1896, p. 166.

3. HARRISON, R.—“On the treatment of some forms of albuminuria by reni-puncture.”—*British Medical Journal*, October 17, 1896, pps. 1126-1128.

4. WOLFF, R.—“Ueber die Erfolge der Nephrorrhaphie auf Grund der nach dem Verfahren von Herrn Professor Rose in Bethanien operirten Fälle.”—*Deutsche Zeitschrift für Chirurgie*, 1897, XLVI., pps. 533-582.

5. EDEBOHLS, G. M.—“Chronic nephritis affecting a movable kidney as an indication for nephropexy.”—*Medical News*, New York, April 22, 1899, pps. 481-483.

6. FERGUSON, A. H.—“Surgical treatment of nephritis or Bright's disease.”—*Medical Standard*, Chicago, June, 1899, pps. 215-218.

7. ISRAEL, J.—“Ueber den Einfluss der Nierenspaltung auf akute und chronische Krankheitsprozesse des Nierenparenchyms.”

Read before the Freie Vereinigung der Chirurgen von Berlin, June 12, 1899. *Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie*, 1899, v., pps. 471-510.

8. POUSSON, A.—“De l'intervention chirurgicale dans certaines variétés de néphrites médicales.”—*Association française d'Urologie*, October 21, 1899, pps. 455-495.

9. POUSSON, A.—“De l'existence d'un réflexe réno-rénal dans certaines néphrites médicales et de la possibilité du développement d'une néphrite sympathique.” Communicated to the Académie de Médecine, March 20, 1900. *Annales des maladies des organes génito-urinaires*, April, 1900, pps. 337-355.

10. POUSSON, A.—“Du rôle pathogénique du réflexe réno-rénal.”—*Gazette hebdomadaire des sciences médicales de Bordeaux*, October 28, 1900, pps. 507-512.

11. EDEBOHLS, G. M.—“On bandages for nephroptosis.” Read before the Medical Society of the County of New York, April 22, 1901. *Medical Record*, New York, May 4, 1901, pps. 690-692.

12. POUSSON, A.—“De l'intervention chirurgicale dans les néphrites infectieuses aiguës et dans les néphrites chroniques.”—Proceedings of Société de Chirurgie, May 22 to June 12, 1901. *Revue de Chirurgie*, July, 1901, p. 105.

13. HARRISON, R.—“Renal tension and its treatment by surgical means.”—Read before the Section of Surgery, British Medical Association, Cheltenham, July 30-August 2, 1901. *British Medical Journal*, October 19, 1901, pps. 1125-1129.

14. POUSSON, A.—“Contribution à la physiologie pathologique de l'incision et de l'extirpation du rein.”—Association française d'Urologie, October 26, 1901. *Annales des maladies des organes génito-urinaires*, November, 1901, p. 1369.

15. EDEBOHLS, G. M.—“The cure of chronic Bright's Disease by operation.”—*Medical Record*, New York, December 21, 1901, pps. 961-970.

16. EDEBOHLS, G. M.—“Die chirurgische Behandlung des chronischen Morbus Brightii.” Translation in full of (15), by Dr. Wilhelm Karo, Berlin.—*Monatsberichte für Urologie*, February, 1902, pps. 65-86.

17. POUSSE, A.—“De la néphrotomie dans les néphrites médicales chroniques.” Communicated to the Société de Médecine et de Chirurgie de Bordeaux, January 31, 1902.—*Journal de Médecine de Bordeaux*, February 2, 1902, p. 75.

18. MONGOUR, Ch.—De la néphrotomie dans les néphrites médicales chroniques.”—*Journal de Médecine de Bordeaux*, February 9, 1902, pps. 87-90.

19. ISRAEL, J.—“Nierenkolik, Nierenblutung und Nephritis.”—*Deutsche medicinische Wochenschrift*, February 27, 1902, pps. 145-150.

20. POUSSE, A.—“Discussion sur la néphrotomie dans les néphrites médicales.”—*Gazette hebdomadaire des sciences médicales de Bordeaux*, March 16, 1902, p. 127.

Under the heading, “The Cure of Chronic Bright’s Disease by Operation,” the MEDICAL RECORD of March 22, 1902, contains, on page 467, a communication from Dr. A. Rose, the purpose of which, as enunciated in the concluding sentence, is to prove “that Edebohls was *not* the first who introduced the cure of chronic Bright’s disease by operation.” This is as far as Dr. Rose’s sense of the historical proprieties carries him. He does *not* tell us *who* was the first to propose, and *who* was the first to perform operation upon the kidneys for the deliberate purpose of curing chronic Bright’s disease. Instead, he cites, in a loose and general way, five medical writers, and makes the charge that I overlooked their claims, or rather the claims alleged for them by Dr. Rose, to priority in the matter. In making this charge Dr. Rose tells the truth as far as he goes, but fails to go far enough, and to tell the whole truth, as I hope to show farther on.

In simple justice to myself, I cannot remain silent under the accusations of Dr. Rose, lest my silence be misconstrued as an admission of the correctness of his charges. With an apology for the necessarily obtrusive personal character of what I shall have to say, I will plunge at once *in medias res*.

My priority claims in relation to the surgical treatment of chronic Bright’s disease may be summarized as follows:

(a). I was the first to observe and to publish the curative effects of nephropexy upon kidneys affected with chronic Bright’s disease.

(b). I was the first to undertake an operation upon the kidneys with the deliberate object in view of bringing about a cure of a previously diagnosticated chronic Bright's disease.

(c). I was the first to propose to treat chronic Bright's disease *as such* by operation upon the kidneys.

(d). I was the first to propose, the first to perform, and the first to report renal decapsulation for chronic Bright's disease.

(e). I was the first to publish a larger number of operations upon kidneys undertaken for the purpose of bringing about a cure of chronic Bright's disease.

The various communications bearing more or less directly upon the questions at issue which have appeared from time to time, including those of all the authors cited by Dr. Rose, as well as those of one or two writers not mentioned by him, will be found enumerated in their order of publication at the head of this article. In my review of these communications, and in the further discussion of the subject, I will, as a matter of convenience and brevity, refer to these publications by number.

(1) Harrison. This publication is, perhaps, the most widely known and the most frequently quoted of those relating in any manner to the subject. It is specifically cited by Rose as one of the articles which he charges I have overlooked. That I have neither overlooked it nor failed to quote it correctly in its proper place will be shown under (15).

Harrison writes:—"Since the introduction of the more general adoption of direct exploration of the kidney through an incision from the loin or otherwise, a certain proportion of cases have been met with where it failed to reveal any obvious cause for the symptom or symptoms which led to the adoption of the proceeding. It has, however, been frequently noticed that such cases were often completely and permanently cured by what was done. Amongst others, Annandale was one of the first to draw attention to this fact."

Following this introduction of the subject, Harrison details three cases of his own presenting acute renal symptoms in which he undertook exploratory nephrotomy, either upon an erroneous diagnosis or without having ventured a positive diagnosis, and in which the symptoms disappeared as a result of the surgical intervention. He writes: "Looking back at the three cases I have

briefly related, I believe that the first was scarlatinal nephritis, the second nephritis from exposure to cold and damp, and the last subacute nephritis following most probably upon influenza."

Harrison believes that the good results obtained in his cases were due to the relief of renal tension by incision or puncture of the kidney, or of its capsule, or of both. This constitutes a decided amplification and very material extension of an idea expressed a number of years previously by our own countryman, L. McLane Tiffany, in a paper entitled "Free Division of the Capsule of the Kidney for the Relief of Nephralgia." (*Annals of Surgery*, August, 1889, 104-118.) Tiffany writes:—"It appeared to me likely that, from one cause or another, swelling of an irritated kidney might occur, which swelling being resisted by the capsule, could induce a sensation of pain." And again: "Division of the capsule of the kidney at once suggested itself as a therapeutic measure in nephritic colic." In reporting the history of his case Tiffany goes on to say:—"The capsule of the kidney was then freely slit open for a distance of three inches or more, the incision passing by the side of the deep scar referred to. The edges of the cut capsule gaped widely, which I considered evidence that tension had existed."

(2) Newman. The nature of Newman's cases and the indications upon which operation was undertaken are sufficiently evident from the title, and are tersely stated by Newman himself. He describes "four cases, in two of which he performed nephrorrhaphy for the cure of transitory hydronephrosis, and two other cases in which the same operation was resorted to for the relief of torsion of the renal blood vessels, causing albuminuria and the presence of tube casts in the urine." They are not claimed by Newman as cases of chronic nephritis, but are cited as illustrating the transient congestive effects of intermittent hydronephrosis and partial strangulation upon a movable kidney, effects already well known, chiefly through the writings of Dietl, in 1864, and of Landau, in 1881.

(3) Harrison, in this paper, repeats his three cases already detailed in (1), gives an additional case of Hoeber, and cites Newman's two cases outlined in (2). He proposes incision in acute suppression of urine and in acute nephritis with tenderness on pressure over kidney and slow disappearance of casts and albumin.

(4) Wolff. One of Edmund Rose's cases, detailed by Wolff, is cited specifically by Dr. Achilles Rose, as proving that Edebohls was not the first "who discovered the effect of nephropexy on the kidney affected by Bright's disease." Dr. A. Rose quotes from Mongour (18):—"In Rose's case especially the kidney was effected by well-marked chronic nephritis, and the urine, examined several years after the nephropexy, revealed absolutely no signs of renal lesion." Unfortunately for Dr. A. Rose, Mongour (18) evidently quoted from my own paper (15), where is stated, on page 969: "One practically identical observation is recorded by Wolff as following a nephropexy performed by Rose. At the operation the kidney was found to be the seat of well-marked chronic nephritis, while examination of the urine, made several years later, showed both kidneys to be healthy." Karo (16), in translating my article (15) into German, adds a footnote on page 82, to the following effect: "Edebohls has not understood Wolff correctly. Wolff simply mentions that the kidney was atrophic; there is no mention of nephritis. On admission the urine was 'slightly turbid, free from albumin.'" On again consulting Wolff's publication I find that Karo is correct, and that I originally misunderstood Wolff. My apologies are due to Dr. Rose for having, though unintentionally and only mediately through Mongour (18), led him into error; though why Dr. Rose preferred to quote at second hand from Mongour's publication in a foreign tongue, rather than from my own prior publication (15) in English, still remains to be explained.

The case in question of E. Rose, reported by Wolff, was operated upon on January 14, 1896. So that even if it had been a case of nephropexy upon a movable kidney affected by chronic nephritis, *which it was not*, it was antedated by four similar operations of my own, which a reference to (5) will show to have been performed on November 29, 1892; March 10, 1893; May 11, 1893, and January 11, 1896, respectively.

The foregoing, taken in connection with what I shall have to say under (5), seems to me to prove clearly my claim (a), that I was the first to observe and to publish the curative effects of nephropexy upon kidneys affected with chronic Bright's disease.

(5) Edebohls. The scope of this paper is clearly indicated by its title. In it I report six cases of nephropexy performed upon

movable kidneys the seat of chronic nephritis. The favorable experiences as regards the permanent cure of the co-existing chronic Bright's disease obtained in Cases I., IV., and V., led me to operate upon Case VI. with the deliberate object in view of favorably influencing or curing the chronic nephritis. To quote from the original: "The fortunate effects (*i. e.*, the complete and permanent disappearance of albumin and casts from the urine) in three of these five cases influenced me to regard the chronic nephritis of the sixth as a new indication, additional to other well-recognized and admitted existing indications, of nephropexy for movable kidney." And again: "In view of the favorable results obtained in the cases already cited, bilateral nephropexy was advised, both to relieve the symptoms due to mobility of the kidney, and with the hope of favorably influencing the nephritis. Both kidneys were anchored and the uterus curetted, January 10, 1898." As a result of the operation, the patient was cured of her chronic Bright's disease, and remains cured to this day. The concluding sentence of the paper reads: "My own favorable experience warrants me, for the present, in regarding chronic nephritis affecting a movable kidney as an important indication for nephropexy."

The above is presented in substantiation of claim (*b*), that I was the first to undertake an operation upon the kidneys with the deliberate purpose of bringing about a cure of a previously diagnosed chronic Bright's disease, and of claim (*c*), that I was the first to propose to treat chronic Bright's disease as such by operation upon the kidneys.

It is from this paper that Dr. Rose quotes to show that I overlooked previous publications on the same subject. He does not add that, in reality, there was no previous literature on the subject of which this article treats: "Chronic nephritis affecting a movable kidney as an indication for nephropexy." Nor does Dr. Rose add that in my subsequent publication (15), equally well known to him, I give full references to the writings of Harrison, Newman, Wolff as reporter of E. Rose's cases, and Ferguson. In making the charge, therefore, that I overlooked the publications of these writers, apart from the fact that Ferguson did not publish until after the appearance of my publication (5), Dr. Rose, as I have already stated, tells the truth as far as he goes, but fails to go far enough and to tell the whole truth.

(6) Ferguson. The tenor of Ferguson's communication is summed up as follows in Edebohls (15), from which I take the liberty to quote: "Ferguson operated upon two kidneys, in the first of which 'no diagnosis was made, but a stone in the kidney was suspected and exploration advised,' while in the second, operation was undertaken upon the diagnosis of 'septic kidney.' On operation, both proved to be uncomplicated cases of acute or sub-acute nephritis. Nephropexy was performed upon both patients, and was followed by the prompt disappearance of albumin and casts from the urine. Ferguson's two patients were operated upon early in 1899. As a result of the outcome in both, though after a period of observation extending over a few months only, Ferguson, in June, 1899, seconded my proposition, made in April, 1899, to treat chronic Bright's disease surgically. Neither Ferguson's paper nor my own, however, has received much attention, and no other publications of the same tenor have come to my knowledge."

(7) Israel, in this important communication, details his own large personal experience in the surgical treatment of acute suppression of urine, renal colic and hæmaturia of renal origin, reporting fourteen operations with three deaths. As will be seen under (19), Israel resents the imputation of Senator that the tendency of this article is to lead to the surgical treatment of Bright's disease.

(8) Pousson. An industrious collection, from the literature, of twenty-five cases of nephrectomy and nephrotomy, including two nephrectomies and one nephrotomy followed by nephrectomy of his own, to illustrate, "le traitement chirurgical des certaines néphrites médicales." What Pousson understands under "néphrites médicales" is shown by his classification, which reads as follows:

- | | |
|--|----------|
| 1. Néphrites hématuriques..... | 10 cases |
| 2. Néphrites compliquées de névralgie..... | 2 cases |
| 3. Néphrites infectieuses subaiguës (under
which heading he ranges the three cases
of Harrison—(1) | 4 cases |
| 4. Néphrites infectieuses aiguës..... | 9 cases |

Pousson's own cases are a nephrectomy for hæmaturia, a nephrectomy for "anurie calculeuse gauche," and a nephrotomy,

followed six months later by nephrectomy, for "néphrite hæmaturique unilaterale."

(9) Pousson. Essentially a lengthy detail of his case of nephrotomy followed by nephrectomy already quoted in (8). It leads up to

(10) Pousson. Essentially a selection from the cases already reported in (8), and their rearrangement, with the object of proving the existence of a reno-renal reflex and the rôle played by it in pathogeny.

It will, probably, be urged that the above publications of Pousson are scarcely pertinent to the subject of the surgical treatment of chronic Bright's disease. I have introduced them, however, because I wish to refer to them in the discussion of later articles by Pousson, whose claims to priority are specifically urged by Dr. Rose. What Pousson himself has to say regarding these claims will appear under (20).

(11) Edebohls. This paper contains the formal announcement of my proposition to treat surgically all cases of chronic Bright's disease. On page 691 we read: "I am now prepared to go a step farther and propose surgical intervention for the purpose of attempting a cure of chronic nephritis, whether the affected kidney be movable or in place. The surgical intervention, as in my practice heretofore, is to take the form of a nephropexy with denudation of the kidney cortex when the kidney is movable. When the inflamed kidney is not movable, and operative fixation of the organ is, therefore, not indicated, I shall content myself with entirely denuding the kidney of its capsule proper and thus affording free opportunity for the formation of new vascular connections, on a large scale, between the blood vessels of the kidney and those of its fatty capsule. The relief to the kidney circulation by the establishment of an abundant collateral circulation, which, I believe, has been the chief factor in the production of the favorable results I have thus far obtained in the cure of Bright's disease affecting a movable kidney, will thus be applied to all chronically inflamed kidneys, whether movable or not."

(12) Pousson. The brief note here given reads as follows: "M. Pousson has operated also upon three cases of chronic nephritis, once for 'néphrite hæmaturique' and twice for uræmic

accidents. In the first case extirpation of the kidney has brought about cessation of the hæmaturia and a permanent cure, now lasting for three years. In the other two cases nephrotomy relieved transiently the uræmic accidents, which recurred, however, upon the healing of the renal incision. Subsequent removal of the kidney caused their disappearance in one of these patients."

Two of these cases, and possibly the third, have already been reported in other connections by Pousson (8), (9), (10). It is evident from the above account that there was no question of operation for the cure of chronic Bright's disease in any of these three cases, unless, indeed, extirpation of the kidney, which was performed in two cases, be accepted as a legitimate operation for the cure of chronic nephritis.

(13) Harrison repeats the histories of his three cases detailed in (1) and (3), and contributes three additional cases. The new cases are:

* CASE IV.—Nephrotomy for acute pain in a kidney, the seat of nephritis. Harrison thinks the incision prevented the nephritis from becoming chronic.

CASE V.—Puncture of a kidney and its capsule for suppression of urine due to acute congestion, the result of injury.

CASE VI.—Incision and drainage of a kidney, the seat of cystic degeneration.

The relief of renal tension by incision dominates this as well as Harrison's two previous communications (1) and (3). The character of the cases operated upon is clear from the outlines presented above.

(14) Pousson. The brief, and rather unsatisfactory, report states: "M. Pousson has been led to attribute the urinary disturbances of 'les brightiques' to an excess of tension and to combat them by nephrotomy." "He has practiced this operation in five cases of parenchymatous, interstitial or mixed nephritis." Three of these cases are detailed in (12), a reference to which will show that they were not operations for the cure of chronic Bright's disease, while a further reference to (20) will show that Pousson himself does not regard them as such.

"In each of these patients the author operated upon one kidney only, basing his choice upon certain vague indications." Operation was performed upon one kidney only, even though "in three

cases the inflammation involved both kidneys." One of his patients died within forty-eight hours after operation; four recovered.

(15) Edebohls. This article contains a tabulated report of all my operations, to date of publication, upon the kidneys of patients suffering from chronic Bright's disease, together with a fuller description of my procedure of renal decapsulation for chronic Bright's disease. The contents of this paper are offered in evidence of the validity of claim (*d*), that I was the first to propose, the first to perform, and the first to report a case of renal decapsulation for chronic Bright's disease; and of claim (*e*), that I was the first and, I may add, thus far the only one, to publish a larger number of operations upon kidneys undertaken for the purpose of bringing about a cure of chronic Bright's disease.

Twenty-eight kidneys, in all stages of chronic Bright's disease, were operated upon in nineteen patients. In fourteen of these nineteen patients operation was undertaken either for the sole purpose, or for the purpose amongst others, of bringing about a cure of chronic Bright's disease. In eight patients cures of chronic Bright's disease, lasting at the time of report from one to over eight years after operation, were obtained.

(16) Edebohls. Karo's translation in full of (15) into German was the occasion of calling attention to the error into which Edebohls had fallen in relation to one of E. Rose's cases, as already set forth in (4).

(17) Pousson. "During the past three years Pousson has operated six 'brightiques,' and presents to the Society two patients, one of whom can be considered as cured."

The brief report is as meagre and unsatisfactory as (14). Three of the six patients are apparently those whose histories have already been repeatedly given and referred to by Pousson in (8), (9), (10), (12) and (14). That they were not operations undertaken for the cure of chronic Bright's disease has already been shown. The two patients presented were operated upon on July 3, 1901, and August 7, 1901, respectively. The date of operation of the sixth patient, who died within forty-eight hours after operation, is not given. Pousson himself, as will be seen under (20), does not claim that in any of these cases he operated for the cure of chronic Bright's disease as such.

(18) Mongour. This paper read apropos of Pousson's presentation of his two cases (17), deals in general terms with nephrotomy as an emergency operation in cases of chronic nephritis. In the course of some historical remarks Mongour says: "Encouraged by these facts, M. Pousson conceived the idea of practising nephrotomy to remedy the grave and menacing accidents of chronic nephritis," which friendly imputation, however, Pousson gently denies in (21).

(19) Israel. Israel's position in the matter under discussion is clearly defined by himself in this his contribution to the rather warm discussion which followed the reading of Senator's paper on "Nierenkolik, Nierenblutung und Nephritis," before the Verein für innere Medicin in Berlin, on January 20, 1892. Israel writes: "As is apparent from what I have just said, I have never attempted to cure with the knife any form of nephritis whatsoever. *On the contrary, my intervention had for its sole object the removal of the distressing or dangerous symptoms of colic and profuse hemorrhages arising in connection with nephritis.*" And farther on we read: "I wish to correct another mistake of my friends as well as of my opponents. Many have thought that I sought to inaugurate an era of the surgical treatment of Bright's disease. Such has been far from being my intention."

(20) Pousson. In the discussion following the reading of a paper by Mongour (18), Pousson defines his own position in the development of the subject in the following extracts: "My friend and colleague Mongour overdoes it when he ascribes to me the merit of having been the first to conceive the idea of interfering surgically in cases of chronic nephritis." "The most important contribution to this subject is that of Edebohls, of New York." "It is plainly evident that 'l'interpretation d'Edebohls' is quite different from that which prompted Harrison's and my own operations." "Personally I have operated only when pressed by grave and well-nigh extreme symptoms; much less with the aim of curing my patients than of giving them a chance in the struggle against accidental complications which had resisted medical therapeutics." "For my own part, I cannot help being favorably impressed by the eighteen observations of Edebohls. That skilful and honorable surgeon can neither deceive himself nor wish to deceive us; the operation which he has recommended 'dans la periode

d'état du mal de Bright' it appears to me should be imitated. Less bold than he, I have operated only under the pressure of grave accidental complications."

This finishes my review of the literature more or less pertinent to the subject of the operative treatment of chronic Bright's disease, a subject as yet in its infancy. True and accurate history, even though recent, is admittedly difficult to write, especially when the historian's self is involved. I have tried my best to be fair to others as well as to myself; as to how far I have succeeded I must leave to the reader to judge.

The position of each of the writers above cited on the question at issue, that of the surgical treatment of chronic Bright's disease, may be stated as follows:

E. Rose, as reported by Wolff, is eliminated from the discussion by what has been shown under (4).

D. Newman's cases of hydronephrosis and strangulated movable kidney (3), were not cases of either acute or chronic nephritis, and have no bearing upon the subject of the surgical treatment of nephritis, either acute or chronic.

R. Harrison (1), (3), (13); A. H. Ferguson, (6); J. Israel, (7), (19); A. Pousson, (8), (9), (10), (12), (14), (17), (20); and others cited by the two latter, each report instances of surgical interference in the course of acute, subacute or chronic nephritis, undertaken in some cases upon an erroneous diagnosis, in other cases to meet pressing indications, renal colic, hæmaturia, suppression of urine, etc., *never* with the deliberate object of bringing about a cure of chronic Bright's disease. Israel's (19) and Pousson's (20) own utterances state this fact emphatically.

Harrison, (1), (3), is the only one of the four writers mentioned who published prior to the appearance of my article (5), in which I first advocated the surgical treatment of chronic Bright's disease and detailed a case thus treated. Harrison describes his cases as cases of acute and subacute nephritis. The relief of renal tension by incision of the capsule, or by nephrotomy, dominates all his communications, and he considers that the good results obtained in his six cases were invariably due to its agency. This in itself shows the character of the cases treated by him. My own unpublished experience in a number of cases in which I operated upon the kidneys either for the relief of acute suppression of urine,

for severe hæmaturia, or for enormous swelling due to acute nephritis, bears out the correctness of Harrison's explanation in acute cases and, in a great proportion at least, of acute exacerbations of chronic conditions. In none of the forty-six kidneys affected with *chronic* Bright's disease, however, which I have operated upon to date was there the least evidence of the existence of renal tension. To quote from my paper (15): "It is not a question of the simple relief of renal tension, the beneficial effects of which in acute conditions of the kidney, described by Harrison in 1896, have since been noted by an increasing number of surgeons. In these acute cases the tight fit of the capsule proper is manifest, and the kidney bulges at once through an incision or puncture made through the capsule. In chronic Bright's disease, on the contrary, the capsule proper, although it may be abnormally adherent to the kidney, never compresses the latter, and may even sit loosely upon it. Moreover, on cutting the capsule proper, the edges of the incision do not gap. It is interesting to note that Harrison, in his very recent communication, thinks that puncture to relieve renal tension in acute cases of nephritis may prevent them from advancing to the chronic stage." This extract from my paper is offered also in further refutation of the charge made by Dr. A. Rose that I overlooked the writings of Harrison.

The theory, therefore, on which my operation is based is, as pointed out by Pousson (20), quite different from that which prompted interference in Harrison's cases as well as his own. Nephrotomy for the relief of renal tension, and renal decapsulation for the purpose of creating new blood supplies for a kidney disabled by chronic Bright's disease are two quite different propositions.

The position of Ferguson, finally, has already been fully stated in my review of the only publication of Ferguson (6) bearing upon this subject which has come to my knowledge.*

It is a matter of fact that nowhere in the literature, if we except my own report (5) of 1899, is there any record of an operation performed for the cure of chronic Bright's disease prior to the publication of my paper (15) in December, 1901. Moreover, in all the operations reported by Harrison, Newman, Ferguson, Israel and Pousson, one kidney alone was operated upon,

*A fuller discussion of Ferguson's claims to priority, from the pen of Dr. Richard H. Gibbons, will be found on pages 97 to 101.

whereas an operation for the cure of chronic Bright's disease implies, in the very large majority of cases at least, an operation upon both kidneys. Of the twenty-nine patients with chronic Bright's disease upon whom I have thus far operated, one kidney was operated upon in four, both kidneys in twenty-five.

Israel (19), as we have seen, vehemently resents the imputation of desiring to bring about an era of surgical treatment of Bright's disease. Such an era seems, nevertheless, to have dawned, at least in America. Since the appearance of my article (15) in December last, one surgeon has published a case of operation for the cure of chronic Bright's disease, and I have incidentally learned of twelve additional unpublished cases operated upon by eleven different American surgeons, my operation of renal decapsulation having been performed in each instance. I have but little doubt that a considerably larger number of cases, of which I have not happened to hear, have at this writing been operated upon. Personally, I have, since the publication of (15) performed bilateral renal decapsulation upon ten more sufferers from advanced chronic Bright's disease, two women, one female child, and seven men, two of the latter being physicians.

From all I can learn, all these operations are the direct result of my initiative in the matter. Should disappointment follow the present effort to bring relief and hope of cure to a large number of sufferers from an otherwise incurable fatal malady, it is morally certain that a large share of the responsibility for such disappointment will be laid at my door. It is natural, therefore, and but human, that I should not object to be the recipient of whatever credit the future may show to properly belong to the originator of the surgical treatment of chronic Bright's disease.

RENAL DECAPSULATION VERSUS NEPHROTOMY, RESECTION OF THE KIDNEY, AND NEPHRECTOMY.*

BY GEORGE M. EDEBOHLS, M.D.

(Reprinted from the *British Medical Journal*, November 8, 1902)

Three operations—nephropexy, nephrectomy, and nephrotomy, including under the latter term all incisions of the renal capsule, of the kidney substance, and into the renal pelvis for whatsoever purpose undertaken, have up to the present time dominated the field of renal surgery. In comparison with the operations just named, resections of the kidney and plastic operations upon the renal pelvis and the upper ends of the ureters have been but infrequently performed.

To the above list of operations performed upon the kidneys, the writer has recently added renal decapsulation, an operation originally devised, proposed, and performed by him for the cure of chronic Bright's disease (b, c). Whether chronic Bright's disease will come to be added to the list of surgical diseases of the kidney may still be considered *sub judice*. My experience up to the present time seems to indicate that such will be the case.

The object of the present communication is to call attention to some cases of admittedly surgical affections of the kidney usually treated by nephrotomy, resection of the kidney, and even nephrectomy, to the treatment of which the writer has applied renal decapsulation, with results sufficiently good to warrant a further continuance of the practice.

I am convinced that my contention, that renal decapsulation, whenever it will give us equally good results, is to be preferred to nephrotomy, resection of the kidney, and nephrectomy, will be

*Read before the Section on Surgery, British Medical Association, Manchester, August, 1902.

disputed by but few practical surgeons. In renal decapsulation the kidney is conserved in its entirety, and no damage whatsoever is done to its important secreting structures. As showing the necessarily deleterious consequences of even simple nephrotomy, Langemak reports some experiments made by him upon rabbits. He exposed the left kidney, made two simple incisions into it, sutured the incisions immediately with catgut, and replaced the organ. The animals, seventy-five in number, were killed at intervals varying from half an hour to seven months after operation. Invariably an infarct formation was found in the kidney corresponding in size to that of the severed artery, with impairment of structure and function in the entire area involved.

Renal decapsulation possesses a further advantage over the operative procedures mentioned in the lessened danger from hemorrhage. In renal decapsulation the hemorrhage is insignificant—practically nil. A nephrectomy may often be performed without hemorrhage of any account. More than one patient, however, has bled to death on the table, or has perished from secondary hemorrhage hours or days after nephrectomy. The same holds good of nephrotomy which, when performed through an attenuated shell of kidney substance, may be practically bloodless. Incision into the renal pelvis, however, through a comparatively healthy kidney of normal or increased thickness, is frequently attended by frightful hemorrhage, sometimes leading to death on the table, and occasionally so uncontrollable by other means that the operator in order to check it was forced to remove the kidney. It is within the recollection of many of you what profound admiration the courage of Mr. Henry Morris excited when, some twenty years ago, he was the first to dare to cut through the healthy kidney substance into the renal pelvis for the purpose of extracting a stone. The same, if not greater, danger of hemorrhage pertains to resection of the kidney as to nephrotomy.

The third reason for preferring renal decapsulation, other things being equal, to its predecessors lies in the greater simplicity of wound treatment. A nephrectomy may be done with complete primary closure and union, as I have repeatedly witnessed in my own work, although the majority of surgeons still prefer to drain. Nephrotomy and resection of the kidney involve drainage in the vast majority of conditions for which these operations are undertaken. With decapsulation of the kidney, closure without drain-

age has been my rule, and primary union may be obtained under almost all conditions, even after decapsulating a kidney the seat of miliary abscesses, as I will relate further on. The formation of a urinary fistula, with possibly infection of the kidney requiring subsequent removal of the organ, is a danger pertaining to both nephrotomy and resection of the kidney, but not to renal decapsulation. Reasons, therefore, mainly associated with the comparative innocuousness of the procedure, the lessened danger of hemorrhage, the greater simplicity of the after-treatment carrying with it a more rapid and pleasant convalescence, and the avoidance of urinary fistula and its sequelæ, lead me to prefer renal decapsulation to nephrectomy, resection of the kidney, and nephrotomy whenever it will answer the purpose equally well or better than the last-named operations.

The indications for nephrectomy have in the course of recent years been considerably limited by nephropexy, resection of the kidney, and nephrotomy. Excision of a kidney simply because it is movable is at present regarded as absolutely indefensible; nephropexy is the proper remedy. Excision of a kidney for renal hematuria not due to the presence of a tumor is equally unjustifiable; simple exploratory incision, incision of the capsule proper, nephropexy, nephrotomy, and decapsulation have each, in a number of cases, put a final stop to the hemorrhage. The necessity and propriety of excising a kidney affected with multiple abscesses have even been questioned, notably by Lennander, who has obtained good results in cases of this character from nephrotomy combined with excision of portions of the kidney substance. I shall have occasion to recur to the observations of Lennander further on in connection with two personal experiences with cases of a similar nature treated by renal decapsulation. These experiences seem to indicate that just as the indications for nephrectomy have, in the course of time, come to be limited by more conservative procedures, notably by nephrotomy, so the indications for nephrotomy are in turn about to be limited by renal decapsulation.

Nephrotomy for the extraction of renal calculus, for the excision of renal tumors, and for the evacuation and drainage of collections of pus in the renal pelvis occupies a field all its own, a field from which neither renal decapsulation nor any other surgical procedure can displace it. I propose, however, on the basis of my personal experience, limited though it be, to question the su-

premacv of nephrotomy in other fields in which it has heretofore been accepted as the only proper procedure.

Before proceeding to a consideration of the applicability of renal decapsulation to some conditions hitherto treated by nephrotomy, let us consider for a moment the nature of the two operations. The reasons for preferring renal decapsulation to nephrotomy, other things being equal, have already been considered.

The incision for exposing the kidney is the same whether renal decapsulation, nephrotomy, resection of the kidney, or nephrectomy be contemplated. The patient is placed prone upon the table, with the author's kidney air-cushion underlying and supporting the abdomen. Both kidneys are thus rendered accessible to operation without the necessity of changing the patient's position. An incision is carried from the twelfth rib to the crest of the ilium along the outer margin of the erector spinae, without opening the sheath of that muscle. The fibers of the latissimus dorsi are bluntly separated in the direction of their course, without cutting. The ilio-hypogastric nerve is sought for and drawn to one side or other, out of the way of harm. Division of the transversalis fascia exposes the perirenal fat. This is divided over the convexity of the kidney until the capsule proper is reached. If possible, next deliver the kidney into the wound or out upon the skin of the back, a procedure which greatly facilitates further operative measures in both renal decapsulation and nephrotomy. When such delivery of the kidney is impossible, the rest of the work must be done at a great disadvantage, with the kidney well up underneath the lower ribs, and with the fatty capsule constantly overlapping the organ to a greater or less extent.

From this point on the operations of nephrotomy and renal decapsulation vary. The further steps of the operation of nephrotomy have so often been described that it is unnecessary to repeat them here.

In performing renal decapsulation the operator next proceeds to bluntly separate the fatty capsule from the capsule proper, the dissection being continued on either aspect and around both poles of the kidney until the renal pelvis is reached. Now and then the fatty capsule may be found so thickened and adherent, as the result of chronic perinephritis, that the scissors or knife may be required to separate it from the capsule proper. The kidney with its capsule proper is next lifted from its fatty capsule bed, and

if possible delivered into or through the wound. The capsule proper is divided on a director along the entire length of the convex external border of the kidney and clean around the extremity of either pole. Each half of the capsule proper is in turn stripped from the kidney and reflected towards the pelvis until the entire surface of the kidney lies raw and denuded before the operator. In separating the capsule proper from the kidney care must be taken not to break or tear away parts of the kidney substance, which is often very friable and very firmly connected with the capsule proper, especially in the presence of chronic interstitial nephritis. I have found the smooth surface of the index finger of the rubber-gloved hand the best instrument for safely effecting separation of the capsule proper from the kidney. The stripped-off capsule proper is next cut away entirely, close to its junction with the pelvis of the kidney, and removed.

Delivery of the kidney into the bottom of or out of the wound greatly facilitates the decapsulation part of the operation, whereas if the kidney cannot be readily reached the operation sometimes becomes very difficult. In the latter event the entire capsule proper may have to be peeled off at finger's length in the bottom of the wound beyond the reach of sight. The capsule proper should invariably be peeled off in its entirety from the surface of the kidney, and excised *in toto* if possible. When total excision is found impossible, any remaining portions of the capsule proper are simply reflected backward around the root of the kidney, where they will curl up and stay. The kidney is dropped back into its fatty bed and the external incision is closed. Drainage, save under exceptional conditions, is dispensed with. After both kidneys have been thus operated on, the dressings are applied, and the patient is put to bed.

Decapsulation of both kidneys for chronic Bright's disease requires for its performance from half an hour to one hour, counting from the first incision to complete closure of both wounds and the application of dressings. It is advisable to keep the patient in bed, preferably upon the back, for two or three weeks after operation, according to circumstances.

Decapsulation of one kidney is, in itself, a less serious operation than either nephropexy, nephrotomy, resection of the kidney, or nephrectomy. In other words, if each of these operations were performed upon a series of 100 persons of average health and with

normal kidneys, the mortality attending renal decapsulation should be less than that of any of the other operations named. The writer (e) recently collected statistics of 846 nephropexies, single and bilateral, giving a mortality of 1.65 per cent. Under equal conditions of health, the mortality of decapsulation of both kidneys at one sitting should be less than that of bilateral nephropexy at one sitting. Personally I have anchored both kidneys at one sitting eighty times in all, with but one death. Eleven of these eighty patients suffered from chronic Bright's disease as well as from movable kidneys. Nephropexy is in reality attended with a lesser mortality than that of any other operation performed upon the kidney, for the simple reason that nephropexy, in the immense majority of cases, is performed upon healthy or approximately healthy kidneys. The mortality attending the other operations mentioned is that of the disease for which they are undertaken, rather than that of the operations themselves, and can scarcely be accurately expressed in figures.

When renal decapsulation is performed for the purpose of curing chronic Bright's disease, both kidneys should always be operated on at one sitting. The grave danger in operating for chronic Bright's disease lies in the anæsthetic rather than in the operation itself, and a patient should not be twice exposed to this danger. When operating for conditions other than chronic Bright's, decapsulation of one kidney will probably prove the rule.

Following the publication of my articles (b, c), Claude and Balthasard began an experimental investigation of the effects of renal decapsulation. They operated upon four healthy dogs. The first animal died of peritonitis, a fact which is possibly explained by the attempt to produce adhesions between the decapsulated kidney on the one hand, and the peritoneum and epiploon on the other, instead of between the raw kidney and its fatty capsule. They thus made an intraperitoneal of what should be an extra-peritoneal operation. The operation was primarily unilateral in each instance, the second kidney being operated upon in two of the three survivors twelve days after the first operation.

These experiments are, of course, too few in number to permit of deductions of wide application, and were, moreover, performed on healthy dogs. The authors indicate that they are engaged in studies to determine the effects of decapsulation upon kidneys

upon which experimental nephritis has been inflicted. As a result of their experiments thus far, they reach the conclusion that the renal function is not appreciably disturbed by renal decapsulation, and that the kidney after decapsulation continues to perform its function as an emunctory of waste and toxic substances.

These conclusions are abundantly sustained by my clinical experience. During the past thirteen years I have performed nephropexy upon considerably more than 300 kidneys. Extensive renal decapsulation was one of the features of each of these nephropexies. During the past nine months I have in addition performed complete decapsulation, mainly for the cure of chronic Bright's disease, upon more than fifty kidneys. I have yet to see the first evil effect attributable to the decapsulation as such. Even the danger apprehended by some of subsequent compression of the kidney substance as a result of peripheral cicatricial contraction has failed to materialize.

Altogether I have operated upon the kidneys of forty patients suffering from chronic Bright's disease—twenty-three women, one child, and sixteen men, six of the latter being physicians. In sixteen of the forty, more or less extensive decapsulation followed by nephropexy was the operation performed. In four of the sixteen the right kidney alone was anchored; in twelve both kidneys were operated on.

The final results in these sixteen cases I have published in a previous paper (c). Upon the remaining twenty-four patients complete bilateral renal decapsulation for the purpose of bringing about a cure of chronic Bright's disease was the sole operation performed. These twenty-four cases have all been operated upon within the past nine months, and will not be ready for final report for a year or so to come.

The object of the present paper, as already stated, is to present a preliminary report of six cases in which I have performed renal decapsulation for conditions other than chronic Bright's disease. I will present the cases in brief outline, following each case with a few remarks:

CASE I.—*Acute Pyelonephritis and Miliary Abscesses of both Kidneys, complicated with Chronic Bright's Disease: Right Nephrectomy and Decapsulation of Left Kidney.*—Married woman, aged 39, mother of four children. Fatty heart for a number of

years past. Nephritis first discovered during her fourth pregnancy, which terminated on February 12, 1901, with the birth of a living child at term. Sepsis, due to a sloughing uterine fibroid, continuously from that date to March 17, 1901, when, under ether, I removed the septic uterus, tubes, ovaries, and a suppurating intraligamentous uterine fibroid by abdominal panhysterectomy. Acute croupous pneumonia, vesico-vaginal fistula due to sloughing of bladder wall, and acute right pyelonephritis with multiple abscesses of the kidney, followed the operation. Right nephrectomy, under ether, on July 9, 1901. The kidney was riddled with innumerable abscesses, and its pelvis was filled with pus. A thick bacillus, corresponding morphologically to a species of proteus, was found in the abscess areas. Chronic parenchymatous nephritis of all remaining kidney tissue. Marvelous improvement after operation, the urinary fistula closing spontaneously within ten days. Nephrectomy wound firmly healed in three weeks. The symptoms of chronic Bright's disease, however, and pyuria persisted. Decapsulation of left kidney, under nitrous oxide and oxygen anæsthesia, on November 10, 1901. Chronic parenchymatous nephritis and miliary abscesses throughout entire extent of kidney. Examination of a minute piece of kidney tissue removed confirmed the above macroscopic diagnosis. Primary union of entire wound and smooth convalescence. The history of the case thus far I have already reported in full (c).

In February, 1902, under nitrous oxide and oxygen anæsthesia, I operated at one sitting for the radical cure of an abdominal and a right lumbar hernia. The entire series of operations as described above was performed at the patient's home.

Since the operation of November 10, 1901, the patient has felt perfectly well, with the exception of an exacerbation now and then of her chronic cystitis. She is up and about, enjoys life, plays her part in it, and is to all appearances a well woman. Pus, albumin, and an occasional cast are, however, still present in the urine. The kidney infection seems to be shorn of its virulence by urotropin, which she has steadily taken in large doses—as much as eight grams daily for months at a time.*

CASE II. *Acute Right Pyelonephritis with Miliary Abscesses:*

*For fuller details of this case and for final result, consult Case No. 18, page 179.

Decapsulation of Right Kidney.—Married woman, aged 22, mother of one child, born in early part of 1901. Again pregnant in fourth month. On May 8, 1902, chills and fever (103.5 deg. F.) with severe pains and swelling in right lumbar region, and pus in urine. Right kidney enlarged to more than twice the normal size. Diagnosis: Acute right pyelonephritis.

Operation, May 19, 1902. Tissues around kidney greatly congested; acute perinephritis. Excision of entire inflamed fatty capsule. Walls of renal pelvis thickened, but pelvis not dilated. No stone in pelvis or upper five centimeters of ureter. Kidney twice the normal size, angrily congested, bluish, a little hard. Decapsulation of kidney. Innumerable miliary abscesses everywhere upon the surface and throughout the substance of the kidney. The resemblance to miliary tuberculosis, which if present would have called for removal of the kidney, was so great that a small piece of kidney tissue was cut out and sent to the laboratory for immediate microscopical examination of a frozen section. In fifteen minutes Professor Brooks reported: "Purulent inflammation of kidney; no evidence of tuberculosis." The kidney was then anchored by sutures passed through the detached capsule proper; a few strands of silkworm were laid along the raw surface of the kidney for drainage, and the wound was closed throughout. The silkworm strands were withdrawn on the seventh day and primary union of the entire wound was obtained, a result which was somewhat a matter of surprise, since innumerable small abscesses occupied the raw surface of the kidney at the bottom of the wound. The infecting agent, judging from the history of the case, was probably the gonococcus. From the day of operation the patient has had no rise of temperature or pulse, nor any untoward symptom. Since leaving her bed, three weeks after operation, she has gone about her ordinary duties, and, according to her statements, has never felt better in her life. Pus, although in gradually diminishing amount, is still present in the urine. She is taking urotropin constantly since operation.

This case represents an instance of well-marked and well-authenticated pyelonephritis with miliary abscesses—the well-known surgical kidney—treated by renal decapsulation. Nephrectomy was considered the only correct treatment of this condition until the appearance of the work of Lennander in 1901. Lennander

reports five cases of acute pyelonephritis with miliary abscesses treated by splitting of the kidney throughout its entire length (nephrotomy), and resection of portions of the infected organ. Four of his cases made beautiful recoveries; one died.

Personally I have performed nephrectomy upon a number of kidneys affected with miliary abscesses, and in each instance the abscesses were found evenly distributed throughout the substance of the organ. It is difficult for me to understand how Lennander could have removed all diseased areas of infection and left any part of the kidney.

If the resultant recovery of four of his patients be advanced as proof that all infected portions of the kidney were removed, or, in other words, that if such had not been done the patients could not have recovered and lived, I would respectfully present in rebuttal the histories of both of my cases above outlined. In both of them kidneys fairly riddled with miliary abscesses were left in their entirety, and both patients made satisfactory recoveries. The entire subject of infection of the kidneys, it appears to me, must be made the subject of new study and investigation, and of revision in the light of recent surgical experiences. I have but little doubt that Case II. would have made a good recovery without any operation whatsoever, since the temperature and pulse were normal for two days preceding operation. Indeed, I would have postponed operation indefinitely were it not for the fact that the patient was four months pregnant, and that further serious kidney complications nearer term or during delivery were feared. As I feel satisfied that my patient would have done just as well without operation, although in that event the diagnosis would have been open to doubt, so I think it possible that one or more or all of Lennander's cases might have made good recoveries without operation. Who can tell? For the present, nephrectomy, resection of the kidney, nephrotomy, and renal decapsulation represent each in turn a progressive step in the treatment of the so-called surgical kidney.

CASE III. *Acute Hemorrhagic Nephritis: Decapsulation of both Kidneys at One Sitting.*—Married woman of 68. Severe attack of influenza in January, 1900, following by albuminuria and cylindruria, with severe and persistent hematuria. Seen March 7, 1900. Patient uraemic; urine black with blood. Right kidney

three to four times its normal size, displaced, movable ten centimeters, sensitive on pressure. Left kidney enlarged to twice its normal size, displaced, not sensitive. Examination of urine by Professor Brooks showed casts of all varieties in abundance, and a great deal of blood. Diagnosis of Professor Brooks: "Renal hemorrhage; tumor or stone." Clinical diagnosis: Tumor of right kidney.

Operation, March 8, 1900, under nitrous oxide and oxygen anæsthesia. Bilateral lumbar incision. Right kidney three times its normal size, purplish-black from congestion, hardened and infiltrated with numerous extravasations of blood everywhere. No evidence of stone or tumor on careful palpation of the delivered kidney. Left kidney twice the normal size, otherwise in same condition as right kidney, with the addition of the presence of three cysts, the largest being about 3 cm. in diameter. Nephritis acutissima of both organs. The largest cyst was cut away and the two smaller were punctured. Decapsulation of both kidneys and anchorage by means of the detached capsule proper were next performed. The renal hemorrhage ceased immediately and definitely after operation. Casts and albumin in the urine, with uræmia and occasional uræmic coma, persisted during the first two weeks after operation, and then finally disappeared. At the end of three weeks patient was considered well and left her bed. On March 29 she contracted pneumonia, the result of exposure to cold draughts. Oedema of the lungs supervened, to which she succumbed on April 4, 1900.

Examination after death showed the left kidney restored to its normal size; right kidney only slightly enlarged; both kidneys healthy in appearance. Section through both kidneys failed to disclose any evidence of pus, stone, or tumor. Microscopical examination by Professor Brooks showed practically normal kidneys.

Possibly both kidneys would have recovered full health without surgical interference. To the writer's mind the case represented an instance of bilateral acute nephritis of the most extreme type cured by renal decapsulation. It bears out the observations of Harrison, Ferguson, Israel, Pousson, and others regarding the beneficial effects of surgical interference in extreme and complicated cases of acute and subacute nephritis. Decapsulation, in

my case, gave equally good results with nephrotomy as performed by the surgeons cited. These nephrotomies always represented a more or less extensive incision into the kidney substance, except in some of Harrison's cases. Harrison, in his earlier cases, appears to have incised both the capsule proper and the kidney substance. In his latest paper, if I understand him correctly, he considers incision of the capsule proper sufficient. It is difficult, however, if not impossible, to incise the capsule proper without cutting more or less deeply into the kidney substance, unless the incision be made upon a grooved director. Incision of the capsule proper without incision of the kidney substance represents a simpler operation than renal decapsulation, and on that score is preferable to the latter. Whether the results will prove equally favorable with both operations only the future and a larger experience can determine.

CASE IV. *Intermittent Hydronephrosis of Right Kidney associated with Chronic Bright's Disease: Decapsulation and Fixation of Right Kidney.*—Married woman, aged 33. Nephritis during her first pregnancy, which terminated five and a half years ago with the birth of a child at term. Albuminuria much of the time, but no casts in the urine since delivery. Lately pain in right side, with intermittent swelling of right kidney, fever, and pus in the urine. Diagnosis: Suppurative pyelitis of right side.

April 14, 1902, operation upon right kidney. Kidney moderately dilated as the result of hydronephrosis undergoing purulent changes. Careful examination failed to detect any evidences of stone. Kinking of the ureter, due to the displacement of the kidney, was taken as an explanation of the intermittent hydronephrosis. Decapsulation of the kidney and nephropexy were performed, and were followed by primary union.

The patient has done well since operation, and no further attacks of hydronephrosis have occurred. I feel convinced, however, that decapsulation of the left kidney will eventually have to be performed to bring about a perfect cure of her chronic Bright's disease.

CASE V. *Intermittent Right Pyonephrosis and Chronic Interstitial Nephritis: Decapsulation and Fixation of Right Kidney.*—Married woman, aged 49, mother of four children. Ill with backache and pains in abdomen since her last confinement, ten years

ago. Suppurative pyelitis of right side for a year past. Both kidneys movable and sensitive to pressure. Subjective pain all localized in bladder and right lumbar region. Urine albuminous and loaded with pus; occasional pus and mixed casts.

Operation, April 28, 1902. Right lumbar incision. Peritoneum opened, and the bile passages explored. Gall-bladder pretty well filled with stones. At the request of her physician, who was present at the operation, and who was convinced that the cholelithiasis had never given her trouble, the gall-stones were left unmolested. Right kidney moderately enlarged by pyonephrosis. Kidney substance of normal thickness, the seat of chronic interstitial changes. Exploration failed to show a stone in pelvis or ureter. Kinking of ureter due to displacement of the kidney seemed to be the cause leading to hydronephrosis and subsequent pyonephrosis. Decapsulation and fixation of kidney. Primary union and uneventful convalescence.

When last seen the patient's condition remained practically unchanged. I am sure, however, that further surgical interference will be required in her case. What shape that interference must take will depend upon developments.

I have seen and operated upon quite a number of cases of intermittent hydronephrosis associated with movable kidney, and in all of them the temporary appearance of albumin and casts in the urine was a feature of each attack of hydronephrosis. The renal changes accompanying the hydronephrosis in these cases were, therefore, probably of a congestive character, and fixation of the kidney in these cases, as in those reported by Newman and others, cured both the mobility of the kidney and the dependent intermittent hydronephrosis. I shall watch with much interest the outcome in Case v., which represents an attempt to treat pyonephrosis by nephropexy, decapsulation being added mainly in view of the concomitant chronic Bright's disease.

CASE VI. *Polycystic Degeneration of the Kidney and Chronic Diffuse Nephritis: Decapsulation of both Kidneys.*—Married woman, aged 36, suffering from chronic Bright's disease, mobility of both kidneys, chronic appendicitis, retroversion of uterus, and right inguinal hernia. On April 16, 1902, removal of vermiform appendix through right lumbar incision, decapsulation of both kid-

neys, and bilateral nephropexy. Chronic perinephritis and thickening of the capsule proper on either side; total excision of both fatty capsules. Both kidneys slightly larger than normal, a trifle hard and lobulated; left kidney in addition occupied by numerous serous blood cysts, of the average size of a pea, scattered throughout the organ. Examination of a small piece of removed kidney tissue by Professor Brooks showed "the histologic features of diffuse nephritis, with parenchymatous changes most prominent." Convalescence was disturbed by an attack of pneumonia, and by a slight leakage of urine into the depths of one of the wounds, necessitating reopening on that side and healing by granulation.

On May 19, 1902, curettage of uterus, amputation of cervix, inguinal shortening of round ligaments and radical right inguinal herniotomy.

On leaving hospital, June 20, 1902, patient was progressing favorably. It is as yet too soon to speak of final results.*

The six cases above outlined represent my entire experience with renal decapsulation, performed for other reasons than with a view to the cure of chronic Bright's disease. The cases are too few in number and the periods of observation are too brief to warrant deductions laying claim to conclusiveness in the matter. It may fairly be stated, however, that the results obtained to date are sufficiently good to call for a continuance of the practice on the part of the writer, and possibly to warrant its adoption by other surgeons.

*For further history of this case and for final result, consult Case No. 26, page 201.

RENAL DECAPSULATION FOR CHRONIC BRIGHT'S DISEASE.*

BY GEORGE M. EDEBOHLS, M. D.

(Reprinted from the *Medical Record*, March 28, 1903)

The first operation ever undertaken upon the kidneys with the deliberate purpose of bringing about a cure of chronic Bright's disease was performed by the writer on January 10, 1898. This operation consisted in extensive decapsulation, followed by fixation, of both kidneys. The patient, a girl of twenty at the time of operation, has since married, is now five months pregnant, and remains permanently cured of her former chronic Bright's disease, very frequent examinations of the urine made during the past five years invariably showing normal conditions, and her general health since operation being excellent. This operation, together with a report of five preceding operations which gradually led up to it, was published in the *Medical News*, April 22, 1899. In all of these cases the kidneys were movable as well as affected with chronic Bright's disease, and the operation, as already stated, consisted in extensive decapsulation, followed by fixation of the kidney. At the time, the idea came that the cure of chronic Bright's disease in these cases was mainly, if not altogether, due to correction of the position of the kidney by fixation dominated my mind. Further experience, however, and observations made upon the occasion of second operations upon kidneys previously anchored at periods more or less remote from the first operation, gradually evolved the conviction that the decapsulation was mainly responsible for the good results obtained, and that renal decapsulation acted by removing a barrier in the shape of the capsule proper to the creation of a new and increased and more active blood supply to the diseased kidney. The removal of this barrier by renal decapsulation is

*Read before the Medical Association of the Greater City of New York, February 9, 1903.

followed by the formation, on the most extensive scale possible, of new vascular connections between the kidney and its fatty capsule. The removal of inflammatory products by absorption, and the new formation of epithelium capable of carrying on the functions of secretion—in other words, improvement and restoration of the health of the kidney—are the direct results of this increased blood supply and improved circulation of the kidney.

These views were announced in a second publication in the *Medical Record*, May 4, 1901, and based upon them I advanced the proposition to treat chronic Bright's disease, *as such*, by renal decapsulation, whether the affected kidney be found normally situated or displaced.

The proposition as well as the performance of renal decapsulation for the cure of chronic Bright's disease constitute entirely new departures in medicine, original with the writer. The subject was further elaborated, and all the writer's operations upon kidneys affected with chronic Bright's disease were reported in detail in the *Medical Record*, December 21, 1901. The operations numbered nineteen, and included eight cases in which a cure of chronic Bright's disease lasting at the time of report from one to over eight years after operation was obtained. To these publications, and to a résumé prepared by the writer and published in the *Medical Record*, April 26, 1902, the reader who may be interested is referred for fuller details regarding the developmental stage of the surgical treatment of chronic Bright's disease. In this publication, also, the literature of the subject was fully cited and discussed. Included in a continuation of the literature appended to the present paper will be found references to one or two publications more or less pertinent which escaped my attention in the preparation of my last article, and which are here listed for the sake of greater completeness.

During the year 1902 there appeared in various medical journals accounts of isolated cases in which my operation of renal decapsulation for chronic Bright's disease was performed by various surgeons. These cases will be noticed again further on. There also appeared during the same year several communications of a practical character by Israel, Pousson, Lennander, Rovsing and Edebohls, on topics more or less related or germane to the subject of the surgical treatment of chronic Bright's disease, although not concerning themselves directly with the surgical treatment of

chronic Bright's disease *as such*. Israel, indeed, as I have already pointed out in a previous publication (f), emphatically disclaims any intention or desire on his part to bring about an era of the surgical treatment of chronic Bright's disease, and Pousson (h), after repeating his previous experiences, already repeatedly detailed at great length in numerous prior publications, adds one or two new cases of surgical interference on various special indications, and avers that he has never operated for the cure of chronic Bright's disease as such. It may be added, however, that Pousson has recently become a convert to renal decapsulation, although he appears not as yet to have performed the operation. Lennander reports three cases, additional to five previously reported by him, of suppurative pyelonephritis treated surgically by resection of the kidney and drainage. Rovsing (a) fully details seventeen cases in which surgical intervention upon the kidneys was undertaken to meet a variety of indications, and Edebohls (g) reports upon renal decapsulation as performed by him upon six patients for conditions other than chronic Bright's disease. In all of the cases reported by the writers mentioned, operation upon the kidney was undertaken primarily for the relief of grave accidental complications of acute or chronic nephritis, or for renal conditions admittedly requiring surgical interference and complicated by nephritis, such as purulent infection of the kidneys, renal hematuria, renal pain, and suppression of urine.

The publications already commented upon deal with the subject of chronic nephritis upon the basis of practical operative experience. In addition, there have appeared during the year 1902 a number of purely theoretical papers, several of them of pretentious character, touching more or less upon the same subject. As these theoretical papers add little or nothing of material value to either our knowledge or experience, I have omitted citing a reference to them.

Since the announcement of my proposition to treat chronic Bright's disease by decapsulation of the kidneys, reports of nine cases operated upon after my method by seven different American surgeons have found their way into the medical press. Cabot (a) and Elliott each report two cases; Primrose, Lyman, Guiteras (a), and Hanchett, one case each. Guiteras reports, in addition, a unilateral nephropexy with extensive denudation, performed upon a kidney the seat of chronic nephritis. Gradle reports a case oper-

ated upon by Ries, and Caillé details the history of one of his cases operated upon by the writer, and included in my summary to follow. Primrose performed decapsulation upon one kidney only, having at a previous date performed nephrotomy upon the opposite side. Lyman, Cabot, Guiteras and Elliott decapsulated both kidneys at one sitting, while Hanchett and Ries operated upon one kidney at a time. The period of observation intervening between operation and report in those who survived the operation is, however, too short to permit of any deductions of great practical value. In addition to the above published cases, the writer has knowledge of quite a number of unreported cases of renal decapsulation for chronic Bright's disease performed during the past year by a number of surgeons other than those named.

My personal experience with operations upon kidneys the seat of chronic Bright's disease, from the date of my first operation of this character in 1892, up to and including the year 1901, was reported in detail and tabulated in my paper in the *Medical Record* of December 21, 1901. The list embraces nineteen cases. During the year 1902 I have operated upon thirty-two additional cases of chronic Bright's disease, in each of which I performed decapsulation of both kidneys at one and the same sitting. My total experience, therefore, up to the end of the year 1902, embraces fifty-one cases.

Of the fifty-one patients, twenty-nine were females and twenty-two were males. With the exception of a girl of four and a half years, all the patients were adults. The other extreme of age was represented by a man of sixty-seven, and the average age of the fifty-one patients was thirty-four years. Twenty-four of the patients were operated upon at the Post Graduate Hospital, thirteen at St. Francis Hospital, ten at their homes, and four in a private sanitarium.

The basis for the diagnosis of chronic Bright's disease in the nineteen cases already reported was detailed in my previous paper (c). The thirty-two cases operated upon during 1902 were all cases of far advanced chronic Bright's disease. In all of them the clinical history, the physical examination of the patient, and the chemical and microscopical examination of the urine left no room for doubt as to the diagnosis. All of the patients knew that they were the victims of chronic Bright's disease prior to consulting me with a view to operation. While with the

great majority of the patients, gradual loss of strength, increasing pallor, uræmic headaches, vascular and digestive disturbances, dropsy, and other manifestations of chronic Bright's disease, led to medical consultation and the discovery of the kidney affection, quite a number first learned upon application for life insurance that they were the victims of the disease. Others, again, more or less suddenly and more or less completely, lost their eyesight, and derived their first information of the diseased condition of their kidneys from ophthalmoscopic examination, which disclosed the characteristic lesions of the retina due to chronic nephritis. A few obtained their first knowledge of the existence of chronic Bright's disease in their persons as a result of a sudden attack of paralysis. The length of time intervening between the first recognition of chronic Bright's disease and the date of operation is noted in the clinical histories of forty-one of my fifty-one patients. In the remaining ten, the existence of the kidney affection was either noted but a short time before operation, or no exact data bearing upon the point in question could be obtained. In these forty-one patients, Bright's disease was known to be present before operation for periods varying between one month and nineteen years, the average duration for the forty-one being three years and four months, while for the thirty-two cases operated upon in 1902 it was fully four years. It is quite safe to say, however, that in each case the disease existed for a longer or shorter period of time prior to its first recognition, and that renal decapsulation was performed in each case at a considerably more advanced period of the disease than that indicated by the above figures.

Of the thirty-two cases of advanced chronic nephritis operated upon during 1902, very few indeed were uncomplicated or but slightly complicated cases of chronic Bright's disease. Nearly all presented minor, greater, or extreme cardiac and vascular degenerations; arteriosclerosis, hypertrophies of all degrees up to the point of non-compensation and beginning predominant dilatation, pericarditis and endocarditis. Pleuritis and hydrothorax as complications were by no means rare, while one patient had cavities in both lungs, and two patients suffered from cirrhosis of the liver in addition to chronic Bright's disease. The cerebral and ocular complications were represented by hemiplegias, due to changes in the cerebral vessels, to embolism, thrombosis, etc.,

and by the retinal lesions of the final stages of the disease.

The clinical diagnosis in each case was borne out by the conditions presented by the kidneys at operation, the characteristic pathological changes due to the presence of chronic Bright's disease being readily and unmistakably appreciable by sight and touch. Occasionally the diagnosis received a rather superfluous corroboration from the microscopical examination of a minute piece of kidney tissue found adherent to the removed capsule proper. As to the propriety and justifiability of deliberately removing a piece of tissue from a kidney the seat of evident chronic Bright's disease merely for the purpose of microscopical examination, I have already elsewhere expressed myself negatively.

The division or classification of cases of chronic Bright's disease, according to the pathological changes found in the kidneys at operation, into parenchymatous, interstitial and diffuse chronic nephritis, a classification advanced in a former paper (c) as the most practical for our purposes in the present state of our knowledge of the subject, has been maintained and applied to the cases operated upon in 1902. The reasons and basis for the above classification were also sufficiently set forth in the paper mentioned, and need not be here repeated. Of the entire number of fifty-one patients with chronic Bright's disease operated upon, twenty-nine had chronic interstitial nephritis, fourteen had chronic diffuse nephritis, and eight had chronic parenchymatous nephritis. In all the cases of chronic diffuse and of chronic parenchymatous nephritis both kidneys were affected, though not always in equal degree on both sides. In the twenty-nine cases of chronic interstitial nephritis the disease was limited to one kidney in no less than nine instances, affecting both kidneys of twenty patients only.

These nine cases of unilateral chronic nephritis were detailed in my paper of a year ago, and excited a good deal of surprised comment and even of incredulity and denial. While surgeons of greater experience in renal surgery were, as a rule, ready to accept my findings as correct, in view of operative experiences of their own pointing in the same direction, the contention was made by some clinicians of the highest rank that chronic Bright's disease is always bilateral. It appears to the writer that these two different positions and views are not so difficult of reconciliation as may appear on the surface. Chronic Bright's disease, *as such, and in itself*, rarely or never causes death when limited to one kidney;

in fact, its unilateral existence, save in very exceptional instances, goes practically undetected during life unless accidentally revealed either by urinary examination or by the knife of the surgeon. As long as one kidney is healthy, and performs its functions, the general health need not suffer to an extent sufficient to induce consultation with a physician, even though the second kidney be seriously diseased. It has been abundantly proven that one-third of the total kidney substance possessed by man is sufficient to sustain life. That the disease in its further development becomes invariably bilateral is probably the truth. Surgeons, in their operative work, have now and then met the disease in its earlier stages unilaterally; physicians derive their convictions from the fact that the patient comes under their professional care in the later stages, when the disease has become bilateral, and from the observation that the disease, as found in the dead house, is practically always bilateral. Bright's disease, like everything else, must have a beginning; that it may make decided progress in one kidney before attacking the other, I, in common with other surgeons, consider proven. I have not met with any cases of unilateral chronic nephritis in my surgical work of 1902 simply because all of the cases operated upon during that year were cases of *very* far advanced chronic Bright's disease.

A rest in bed of a few days to a week, according to the special indications in each case, is advisable by way of preparation for every patient about to undergo the operation of renal decapsulation for chronic Bright's disease. In all cases of advanced chronic nephritis, almost without exception, the heart is more or less involved, and favoring the organ for a few days prior to the ordeal betters its chances of standing the strain to which the operation necessarily puts it. The rest in bed also minimizes the eliminative work to be performed by the kidneys, resting those organs, and is further utilized for measurement of the daily amount of urine, for chemical and microscopical examination of that secretion, for regulation of the food and drink ingested, for the administration of urotropin, if called for by the presence of pus and bacteria in the urine, for the exhibition of cardiac and vascular regulators like strychnine, digitalis, glonoin, etc., according to the indications in each particular case. With proper preliminary preparation of the patient, the probabilities of a successful issue of the operation are materially increased.

The writer's operation of renal decapsulation for chronic Bright's disease has already been described at sufficient length in previous publications (b, c, g). It only remains to call attention to one or two matters of practical experience which larger opportunities have developed.

Presuming always a reasonable familiarity and experience with renal surgery in general on the part of the operator, there are three conditions, the presence or absence of which makes renal decapsulation a more or less difficult or a comparatively easy operative procedure. The first of these conditions, great length and obliquity of the twelfth rib, with narrowness of the space between last rib and ilium, can be materially overcome by proper posturing of the patient, as on the author's kidney air cushion, for instance, and by a slight modification of the obliquity of the incision. The second factor upon which the ease or difficulty of the operation depends is the mobility of the kidney to be operated upon, or its firm attachment in its normal site well up beneath the ribs. In the latter event, only a small surface of the lower pole of the kidney can be exposed, and even this meager approach to the kidney is sometimes accomplished only under the greatest difficulties. The procedure under these circumstances is to incise the capsule proper at any portion of the surface of the kidney that can be reached, to seize the edges of the capsule wound with forceps, and to complete the separation of the capsule proper from the kidney in the depths of the wound. For detaching the capsule proper from the kidney, especially if the separation must be done in the depths of the wound, beyond aid from the sense of sight, I have found the smooth index finger of the rubber-gloved hand the *very* best instrument. The third condition influencing the facility of renal decapsulation is connected with the more or less firm attachment of the capsule proper to the kidney. In the parenchymatous and diffuse forms of chronic nephritis the capsule will generally be found easily separable from the kidney, while in cases of chronic interstitial nephritis the connections between capsule proper and kidney are frequently of a firm, densely fibrous character. As the kidney tissue is generally very brittle and friable, as the result of long-standing inflammation, great caution and gentleness are necessary to avoid the danger of tearing away pieces of the kidney or of fracturing the organ during attempts at decapsulation. The views upon renal tension as an element in

chronic Bright's disease, which I expressed in a previous publication (c), have but received confirmation as the result of increased experience and observation.

The difficulties of renal decapsulation arising from one or both of the conditions last named receive illustration from two experiences of other operators which have casually come to my knowledge. A colleague, who witnessed a renal decapsulation, or rather an attempt at renal decapsulation, for chronic Bright's disease by a surgeon of his acquaintance, informed me that the surgeon, after cutting down on both sides, was unable to find, let alone explore or decapsulate, either kidney, the organs being probably greatly diminished in size as a result of the chronic interstitial nephritis diagnosticated before operation. The wounds were closed and the patient and his friends were left under the impression that decapsulation had been performed. I have in my possession a letter from a professor of surgery in one of our Western medical colleges detailing his first attempt at renal decapsulation. Unable to bring the kidney into view, he introduced a sharp curette into the depths of the wound, and, at long range and beyond sight, scraped the capsule proper from the kidney all around at haphazard, and as best he could. It is sickening to contemplate the laceration and destruction of kidney substance which must have accompanied this procedure performed upon a patient who, on account of the presence of chronic Bright's disease, could ill afford to spare any portion of his renal tissue.

Renal decapsulation for chronic Bright's disease should, for the present, therefore, be undertaken only by surgeons more or less familiar by practical experience with renal surgery in general. Any other course must tend to bring upon the operation unjust and undeserved disrepute. One surgeon informed me that he had performed four renal decapsulations upon four victims of chronic Bright's disease, each of the four dying promptly after operation. He added that these four operations represented exactly the half of his total experience in renal surgery.

The danger in operations of every kind, renal operations included, upon patients suffering from chronic Bright's disease is, broadly speaking, greater from the anæsthetic than from the operation itself. In renal decapsulation, fortunately, the moderate abstraction of blood directly from the kidneys accompanying and forming a necessary part of the operation, counteracts to a great

extent the congestive effects of the anæsthetic upon the kidneys. Nevertheless, it is *very* important that the operation should never be too prolonged, and I should say that one hour should be regarded as the limit of time to be allowed for decapsulation of both kidneys for chronic Bright's disease. In more than one-half of my operations I have required no longer than half an hour, counting from the first incision to complete closure of both wounds ready for the application of dressings. It is a realization of the necessity for curtailing the duration of the anæsthesia that has prompted the expedient of a team operation, two surgeons operating at the same time, one on either kidney. Personally I feel that, operating singly, I can decapsulate both kidneys in the same space of time that I would require for one kidney if handicapped by the presence of a second surgeon and his assistant working simultaneously upon the fellow organ. Each surgeon and his assistant must necessarily be more or less in the other's way. Another expedient that has been adopted for the purpose of lessening the length of anæsthesia is to operate upon one kidney at a time. Such a course, however, can only be condoned in a surgeon who is not sufficiently practiced in renal surgery to decapsulate both kidneys within the hour, since it is evident that on account of the time required for inducing full anæsthesia before each operation, the total duration of anæsthesia for two operations will be greater than that required for decapsulation of both kidneys performed at the same time.

Ether has continued to be a satisfactory anæsthetic, and, preceded by nitrous oxide, was administered to all but three of the thirty-two patients operated upon in 1902; these three patients were anæsthetized by Dr. Thomas L. Bennett with nitrous oxide and oxygen.

As I have already stated, in all my renal decapsulations of 1902 both kidneys were invariably operated upon at the same sitting. All the wounds were completely closed throughout, and drainage was entirely dispensed with, except in one case, in which a few strands of silkworm gut were left in the wound for a few days to drain off the enormous quantities of serum found at operation in all the tissues of the back as well as in the perirenal fat. Perfect primary union throughout was obtained in all but one of the sixty-four wounds made. In one exception, in which bilateral nephropexy, as well as appendicectomy, for chronic appendicitis through the right lumbar wound, were performed in addition to

renal decapsulation, a temporary leakage of urine occurred from the surface of the right kidney. The cases of chronic nephritis with infection did just as well in the way of perfect healing of the wounds as the cases of chronic nephritis without infection.

In twenty-seven of the thirty-two patients operated upon in 1902, bilateral renal decapsulation was the sole operation performed. In two patients, fixation of both kidneys and removal of the appendix through the right lumbar wound for chronic appendicitis, were practiced at the same sitting with bilateral renal decapsulation. A third patient had fixation of both kidneys, and a fourth had fixation of the right kidney added to bilateral decapsulation. Upon a fifth patient, finally, whose left kidney was found converted into one huge cyst, left nephrectomy and decapsulation of the right kidney were performed at the same sitting. Nephropexy was added to renal decapsulation in those patients who had both chronic Bright's disease and movable kidney or kidneys, only when the symptoms due to mobility of the kidney or kidneys were so decided as to call urgently for relief. When the looseness of the kidneys produced no symptoms the mobility was disregarded, and the operation was shaped entirely with a view to improvement or cure of the chronic Bright's disease.

Of the fifty-one patients suffering from chronic Bright's disease, upon whose kidneys I have operated during the past ten years, from 1892 to the end of 1902, I have lost all traces of only three. All the rest, forty-eight in number, I have managed to keep in touch with up to death or the present writing. This rare achievement, for as such it will be appreciated by all physicians who have tried to follow their cases through the years, is all the more remarkable in view of the fact that the patients are scattered far and wide, less than one-half of the entire number living in New York.

Of the fifty-one patients, fourteen died at periods of time after operation varying between twelve hours and eight years. The following is a brief synopsis or record of the deaths:

CASE No. 3.—Mrs. M. M., aged 28 years, a patient of Dr. R. G. Wiener, was known to have chronic Bright's disease for several years before operation. Operation on the right kidney, May 11, 1893, showed right chronic diffuse nephritis, with formation of a large cyst. Incision of kidney; evacuation of contents of cyst:

suture of kidney wound; extensive decapsulation followed by fixation of kidney. Three years later another surgeon removed the left kidney. For five years more the patient lived with only one kidney, the one originally operated upon by me. At the end of that time a third surgeon performed an abdominal hysterectomy, as a result of which she died, in May, 1901, eight years after my operation upon her right kidney. According to her physician, the nephritis still persisted at her death.

CASE NO. 11.—Mrs. S. G., aged 28. Operation, extensive decapsulation of both kidneys followed by fixation, was performed on November 4, 1899, and showed right chronic interstitial nephritis, the left kidney being healthy. The patient died after an operation for ruptured tubal pregnancy, exactly one year after my operation. Drs. S. J. Meltzer and J. J. Brettauer, who attended her in her last illness, inform me that there was then no chronic Bright's disease, the urine being perfectly normal.

CASE NO. 17.—Mrs. M. S., aged 33 years, patient of Dr. T. W. Vardon, Galt, Ontario, Canada. The history of this case was detailed at length in a former page (see p. 18). Bilateral renal decapsulation was performed upon the practically moribund patient, October 17, 1901, and showed right and left chronic parenchymatous nephritis, with infection, pus being abundant in the urine. Both wounds healed by primary union throughout, and the patient improved marvelously and steadily after operation until December 5, when a severe attack of acute suppurative pyelonephritis supervened, which terminated her life on December 15, 1901, two months after operation.

CASE NO. 19.—Miss A. B., aged 43 years, patient of Dr. F. Schwyzer, suffered from chronic Bright's disease, with cardiac complications, for two years. At the time of operation there existed extreme hypertrophy of the heart, with a double mitral murmur. Bilateral renal decapsulation on December 3, 1901, disclosed far advanced bilateral chronic interstitial nephritis, the kidneys being shrunken to less than half their normal size. Patient left hospital a month after operation, resumed her former dissolute habits, was picked up drunk on the streets a number of times, and finally landed in the Almshouse Hospital, where she died, Decem-

ber 9, 1902, one year after operation. The death certificate gives chronic interstitial nephritis and endocarditis as the causes of death.

CASE No. 24.—A. W. B., male, aged 23 years, a patient of Dr. L. B. McBrayer, Asheville, N. C., while in apparent health was stricken suddenly with almost complete blindness on December 21, 1901, when examination of the eyes and urine revealed chronic Bright's disease as the cause. From that date until operation the patient was so blind that he could not find his way about alone in broad daylight. At operation, April 11, 1902, almost total blindness, profound uræmia, enormous hypertrophy with tumultuous action of the heart, and mitral regurgitation. Operation disclosed far advanced chronic interstitial nephritis, the kidneys being contracted to half their normal size. Uræmia gradually deepened after operation, and severe epistaxis, requiring repeated plugging of the nares, supervened on April 18. Patient died on April 19, eight days after operation, of exhaustion and uræmic coma.

CASE No. 27.—V. M., male, aged 21 years, patient of Dr. A. P. Dodge, Oneida, N. Y. Albuminuria and general dropsy since December, 1900; retinitis albuminurica, with $V = \frac{1}{200}$ in either eye, since December, 1901; heart greatly hypertrophied; stenosis of aortic orifice. Operation, on April 16, 1902, showed advanced chronic diffuse nephritis with beginning contraction of the kidneys. For some months after operation the patient did well, gaining markedly in strength, and recovering his eyesight to a very great degree. On November 1, 1902, he had an attack of acute pleuritis, from which he recovered. On December 25, 1902, uræmic symptoms developed. Uræmic coma and epistaxis closed the scene on January 18, 1903, nine months after operation.

CASE No. 29.—A. J., male, aged 34 years, a patient of Dr. B. R. Morrow, had chronic Bright's disease for five years before coming under observation. General œdema, bronchorrhœa, bronchial hemorrhages, intense dyspnœa and uræmic headaches were the main symptoms. At the time of operation enormous hypertrophy of the heart, with beginning dilatation, uræmia, and the hemorrhagic diathesis were the ominous manifestations. Opera-

tion not advised, but undertaken at patient's earnest pleading on April 21, 1902. Both kidneys were found shrunken to less than half their normal size as a result of chronic interstitial nephritis. Patient died of uræmia on April 24, 1902, three days after operation.

CASE No. 32.—E. W., male, 22 years of age, suffered from chronic parenchymatous nephritis ever since an attack of scarlet fever five years ago. Immense general anasarca and ascites existed, and to relieve the latter the abdomen was tapped five times during the four weeks preceding operation. Renal decapsulation was advised by the surgeons of a hospital of this city of which the patient was an inmate. The surgeons, however, declined to operate themselves, and referred the patient to me. On May 1, 1902, he was transferred in an ambulance from the hospital where he was staying to St. Francis Hospital, where I operated upon him on the following day, May 2, 1902, his desperate condition brooking no delay. The abdomen was relieved of fluid by tapping on the morning of the day of operation. Extreme general anasarca, double hydrothorax, and a feeble heart were present at the time of operation, which showed typical parenchymatous nephritis, the large white kidney, on both sides. On the fourth day after operation acute fibrinous lobar pneumonia developed in the upper half of the left lung, and the patient succumbed to pulmonary œdema on May 8, 1902, six days after operation.

CASE No. 34.—D. L. D., male, 62 years of age, patient of Dr. F. M. Woodard, Springfield, Tenn. Chronic Bright's disease was first recognized on failure of sight in January, 1902, when examination of the eyes disclosed the characteristic retinal changes due to the disease. Moderate cardiac hypertrophy, with an aortic obstructive murmur, were present at operation, which took place on May 26, 1902. Sudden death from acute dilatation of the heart occurred twelve hours after operation.

CASE No. 35.—R. N. H., male, aged 56 years. The patient, a physician, first discovered chronic Bright's disease in his person by uranalysis in May, 1901. Œdema of the face and hands, progressive weakness, rapid aging, uræmic manifestations, tumultuous action of the heart, and great dyspnœa on exertion were the

main symptoms. Effusion into both retinae occurred in February, 1902. At the time of operation the heart was markedly hypertrophied, with a systolic bruit over apex, base and aorta, and dicrotism of the pulse, and there existed general arteriosclerosis and extensive neuro-retinitis albuminurica. Operation, May 26, 1902, disclosed right and left chronic interstitial nephritis. Improvement followed operation, and was maintained until August, 1902, when he gradually grew worse, intense dyspnœa and inability of the stomach to retain food being the most distressing features until his death, which occurred on November 6, 1902, five months and eleven days after operation.

CASE No. 36.—E. T. W., male, 50 years of age. The patient, a physician, awoke one morning in April, 1901, with partial paralysis of the right half of the body, examined his urine, and found he had chronic Bright's disease. In February, 1902, hemorrhage into the left optic nerve was followed by transient total blindness. Slight œdema and stomach disturbance, progressive loss of strength, urgent dyspnœa and tumultuous heart action were the chief other symptoms. When he reached my office with his brother, also a physician, he was scarcely able to breathe, even in the upright posture. The lungs were emphysematous, the heart was hypertrophied to the verge of dilatation, with an occasional aortic regurgitant murmur, and the pulse was dicrotic. He came to me for operation from a great distance, fully aware of his extreme condition and his desperate chances. He requested his brother's and my own frank opinions as to how long he was likely to live without operation, and as to his chances of surviving operation, and when we declared two weeks as the probable extreme limit of life without operation, and that death would probably result from operation, he reflected for a moment and then said: "Very well. I am ready and willing to pit two weeks of the life I am leading against even a very small chance of improvement by operation. I wish you to decapsulate my kidneys." The operation was performed on May 26, 1902. Dr. Thomas L. Bennett began the anæsthesia with nitrous oxide gas and oxygen, but was soon compelled to change to ether, and subsequently to chloroform to avoid death on the table. The operation disclosed chronic interstitial inflammation of both kidneys, and was completed in thirty-three minutes. The patient, however, survived

but twelve hours, death occurring suddenly from acute dilatation of the heart during an effort at vomiting.

CASE No. 39.—G. F. C., male, 67 years of age. The patient, a physician, had nephrolithiasis and acute nephritis thirty years ago. In 1895 he had a sudden attack of hemiplegia due to cerebral embolism, the result of a cardiac lesion, and was paralyzed on one side of the body for nearly a year. Retinitis albuminurica and chronic Bright's disease were discovered in June, 1901. Hypertrophy of the heart with beginning dilatation, mitral regurgitation, and general arteriosclerosis were the unpromising features of the case. In spite of the unfavorable outlook, the patient, a life-long personal and professional friend, insisted that he was entitled to the chance afforded by operation, and demanded that I perform it. Operation, on June 14, 1902, showed bilateral chronic diffuse nephritis. Gas and ether were administered by Dr. Bennett. Left hemiplegia of cerebral origin developed on the day following operation; heart failure threatened from the very beginning, and the kidneys did not act satisfactorily, only 640 c.c. of urine being passed during the fifty-six hours the patient lived after operation. In spite of all our efforts, the patient died of uræmia and heart failure on June 16, 1902.

CASE No. 40.—C. C., male, 29 years of age, first consulted me on March 7, 1902. Chronic Bright's disease was discovered six months previously; shortness of breath and growing weakness were the chief symptoms. Patient has just passed through a mild attack of typhoid fever, which began nearly two months ago. There was immense hypertrophy of the heart, with violent and irregular thumping (galloping heart) and extreme displacement of the apex beat to the left. The patient postponed operation, and in April, 1902, had a severe attack of diphtheria. Following this, great œdema of the feet, and abdominal dropsy, developed. The patient returned to my office three and a half months after his first visit, and requested that operation be performed before I sailed for Europe on my vacation. Decapsulation of both kidneys was performed on June 26, 1902, after consultation with Prof. A. Caillé, who considered that the heart was concentrically hypertrophied and would stand a narcosis. Chronic interstitial nephritis was found on both sides, the right kidney being contracted to

one-half and the left to one-third the normal size. This patient never did well after operation, and died of dilatation of the heart on November 1, 1902, a little over four months after operation.

CASE No. 47.—F. G. C., male, 23 years of age, a patient of Dr. Russell G. Floyd, Eureka Springs, Ark., had typhoid in 1893, and has never been strong since. For the past two years loss of strength, some œdema of face, digestive disturbances and uræmic manifestations were his chief symptoms. Uranalysis in December, 1901, revealed the existence of chronic Bright's disease. There was general arteriosclerosis; the heart was greatly hypertrophied, and a harsh systolic bruit was present over the aortic orifice. Operation, November 26, 1902. The right kidney was first cut down upon, and found contracted to less than half the normal size by chronic interstitial nephritis. The left kidney was next exposed, and found converted into a huge cyst, with no remnants of normal kidney structure. The renal cyst was enucleated and removed entire. The uræmia present at the time of operation gradually deepened, although a fair quantity of urine was passed daily, and the patient died in uræmic coma on December 11, 1902, fifteen days after operation.

Two patients, therefore, died an accidental death, one patient died of acute suppurative pyelonephritis, one of endocarditis, five of uræmia, one of pneumonia, three of acute dilatation of the heart, while in one case death was due to a combination of uræmia and cerebral hemiplegia.

Of the fourteen deaths, seven occurred at periods remote from operation varying between two months and eight years, the average duration of life after operation in the seven cases being one year and eight months.

The remaining seven deaths followed operation at periods varying from twelve hours to fifteen days, and represent the operative mortality in my fifty-one cases, which may therefore be stated as 13.6 per cent. Three of the seven deaths representing the operative mortality were due to uræmia, two to acute dilatation of the heart, while one was caused by pneumonia and one by combined uræmia and cerebral hemiplegia.

In judging my mortality, the fact must be taken into consideration that, for one reason or another, I was compelled to accept cases for operation in which the fatal outcome was an almost

foregone conclusion. Patients as well as their physicians, both sometimes represented in one person, insisted that inasmuch as the precise limit beyond which operation could no longer avail to improve the condition of their kidneys was as yet unknown, they were entitled to the benefit of the doubt, and requested or even demanded operation. On the grounds of ordinary humanity the request could scarcely be denied, the more so as a number of my patients in whom the chances before operation seemed equally desperate with those of some of the patients who died had made unexpected and surprisingly good recoveries. Thus it has happened that I have, either willingly or unwillingly, operated upon every patient who came to me for operation except in two instances. In one of them the day was set for operation; the patient's heart acted so poorly, however, that death on the table seemed inevitable. To the patient's keen disappointment, the operation was declared off. That very night, seven hours after the date set for the operation that was to have been, the patient died suddenly of acute dilatation of the heart. A second patient who desired operation, but whom I advised not to undergo it, and who accepted my advice, died two weeks after I first saw him.

As already stated, the precise limits beyond which renal decapsulation can no longer avail to save the patient's life cannot as yet be positively stated. The complications of chronic Bright's diseases are so numerous, and manifest themselves in such varying combination and severity in different patients, that for the present each case must be judged upon its merits. In advising for or against operation in any given case, much will depend upon a careful consideration of the general condition of the patient, as ascertained by a searching physical examination, as well as upon a critical chemical and microscopical examination of the urine.

Derangements of the heart and of the vascular system most frequently present problems the solution of which will influence our advice for or against operation. A certain degree of cardiac hypertrophy and degeneration goes with every case of chronic Bright's disease, and if uncomplicated, or not too greatly complicated, by other changes in the heart and vascular system, does not contraindicate operation. Indeed, renal decapsulation has proven a boon to several patients not alone in improving the work of their kidneys, but also in secondarily diminishing the cardiac hypertrophy dependent upon chronic Bright's disease. When,

however, the cardiac and vascular changes have advanced too far and become too widespread ever to be made good or even improved, the dangers of the operation itself are so vastly increased that it is not worth the patient's while to take the risk. For what will it avail the patient if the work of his kidneys is more or less improved, if, after all, in the natural course of events, he must soon die of incurable disease of the heart and blood vessels? A patient with chronic Bright's disease who has passed the age of sixty should always be carefully investigated before an operation is decided upon. The changes produced in the blood vessels by advancing years, added to those the result of chronic Bright's disease, constitute a serious handicap for the patient. Age, however, is a relative matter, and a man of seventy may have a younger heart and younger blood vessels, in fact may *be* younger than another of fifty or, for that matter, of forty years. A more extended experience with renal decapsulation, however, is necessary before we can decide positively, in any and every given case of chronic Bright's disease, whether the patient may still hope for cure or improvement from operation, or whether he must be abandoned to his fate.

Bilateral renal decapsulation could be performed by an expert in renal surgery upon one hundred perfectly healthy human beings without the necessity of losing a single life. This is proven by comparison with the statistics of bilateral nephropexy, a more trying surgical procedure, often performed upon patients very much run down and sometimes, in addition, upon kidneys not entirely healthy. Of seventy-three patients in whom I anchored both kidneys at one sitting, *i. e.*, performed extensive renal decapsulation *and* fixation, only one died as the result of operation. The mortality attending renal decapsulation for chronic Bright's disease will, therefore, prove to be the mortality of the disease itself, and of its attendant complications, rather than that of the operative procedure undertaken for its relief.

The writer has been rarely and extremely fortunate in being able to follow up all but three of the fifty-one patients with chronic Bright's disease upon whose kidneys he has operated. The entire fifty-one cases may, for purposes of studying the final results, be divided into two categories; those cases operated upon prior to July 1, 1902, forty in number, and those cases operated upon during the past seven months, numbering eleven.

The forty cases in each of which more than seven months have elapsed since operation are the only ones that may be considered available for estimating the final results. Of these forty patients, thirteen have died since operation and three have been lost sight of, leaving twenty-four patients available for a study of the therapeutic results of renal decapsulation for chronic Bright's disease.

Before proceeding to an analysis of the therapeutic results obtained in these twenty-four cases, some general considerations bearing upon the question of what constitutes cure and improvement in chronic Bright's disease are in order. It will, likewise, be necessary to define the standards by which cure or improvement is to be judged.

In the first place, the natural history and course of chronic Bright's disease, either untreated or treated by methods other than operative, must be taken into account. It is a well-established fact that patients suffering from chronic Bright's disease often experience temporary improvement, both as regards their general health and the condition of their urine, either without treatment of any kind or in connection with treatment of one kind and another. Such improvement is not infrequently maintained for months at a time, in spite of the universally conceded fact that the tendency of chronic Bright's disease, whether its course be more or less protracted, is inevitably to a fatal issue. To prove that cure or improvement after renal decapsulation is due to the operation, it must be shown: First, that cure or improvement follows operation with practical uniformity; second, that a cure, once obtained is, as a rule, lasting; third, that improvement attained by operation is steadily progressive in character in the great majority of cases. These conditions, as I hope to show, have been fulfilled in my cases as far as their limited number and the necessarily brief lapse of time since operation in most of them will permit of tenable deductions and conclusions.

The therapeutic results of renal decapsulation for chronic Bright's disease have turned out more or less unsatisfactory in only two of the twenty-four patients. The first of these cases really constitutes a relapse after cure. It is Case No. 5 of my original report of December 21, 1901. The patient, a married woman of forty-two, first learned that she had chronic Bright's disease in 1891, and for six years thereafter was under constant

medical treatment for the affection. On April 1, 1897, I operated upon her right kidney, which was found to be the seat of chronic interstitial nephritis. During the year following operation steady improvement of the general health kept pace with the gradual disappearance of albumin and casts from the urine. A year after operation the urine finally became free from albumin and casts, and so remained, as evidenced by frequently repeated examinations for nearly four years, during which she considered herself perfectly well. In February, 1902, four years and ten months after operation, albumin and casts reappeared in the urine, and have been found on every uranalysis made during the past year. She again has chronic nephritis, though she does not as yet feel ill enough to take the necessary steps to ascertain whether both kidneys are affected, or, if one only, whether the right kidney originally operated upon, or its fellow, be diseased. Catheterization of both ureters, and examination of the separate urines of each kidney would, of course, determine that exceedingly interesting point, so pregnant with practical significance, which I still hope some day to settle.*

The second patient in whom the results of decapsulation are not all that could be desired is a married woman of twenty-three, Case No. 14 of my previous report, with a very bad family history as regards chronic Bright's disease, of which her mother died at forty, and her only sister at twenty-seven. Her father, still living, is also a sufferer from the affection. The patient was under constant treatment for chronic Bright's disease by her physician, Dr. Henry Ruhl, for more than a year prior to operation, which was performed on April 8, 1901. Both kidneys were found to be affected with chronic diffuse nephritis, and were decapsulated and anchored. For eight months after operation there was steady and satisfactory improvement, both as regards the general health and the findings on uranalysis. During the year past, however, she has suffered from an attack of diphtheria, two or three severe attacks of grippe, and an almost uninterrupted succession of colds. Exacerbations of her chronic nephritis were invariable accompaniments of all these infections and she has

*For further history of this patient and for final outcome, consult Case No. 5, page 153.

made no gain, as far as the uranalysis findings go, over her condition of a year ago.*

Of the remaining twenty-two patients, ten were radically cured of their former chronic Bright's disease, and twelve were greatly improved. A number of the twelve, in addition, appear to be on the high road to a complete and perfect cure. One of the cured cases has already been reported among the deaths, the patient dying after an operation for ruptured tubal pregnancy, one year after my operation on her kidneys. Nine patients remain cured and in the enjoyment of perfect health, with urine free from albumin and casts, at periods varying from one year and nine months to ten years after operation. From the nine cured patients, as well as from ten of those improved, I have received reports, either written or personally presented, together with a specimen of urine for examination, during month of January, 1903.

Of the remaining two, one, a physician, informed me in November, 1902, that his urine was steadily improving, and writes me in January, 1903, that he continues doing well. The other patient, I am informed, is doing well, but I cannot locate him, as he is at present girdling the globe as a traveler.

A study of the phenomena accompanying and demonstrating the progress through improvement to cure after decapsulation of the kidneys for chronic Bright's disease is exceedingly interesting. The first effect of the operation upon the urine is shown in an increased daily output of urea. I have known a daily excretion of six grammes or less of urea, prior to operation, to be increased to a steady daily output of thirty to thirty-five grammes within a month after operation. While the greatest relative gain in the urea output is generally manifested during the first two or three months after operation, the tendency later, although slower in progress and with transient disturbances, is steadily in the direction of a normal daily amount. Of the casts present before operation, those varieties like the waxy, fatty, epithelial and pus casts, which denote advanced destruction of the secreting structure of the kidney, disappear first from the urine, such disappearance usually requiring from a month to over a year. The next step in the progress toward health is denoted by finding in the urine only granular and hyaline casts and albumin. The granular and

*For further history of this patient and for final outcome, consult Case No. 14, page 170.

hyaline casts gradually become fewer and fewer and finally disappear entirely. The albumin, in gradually diminishing amounts, usually persists in the urine for a greater or less time after the permanent disappearance of all casts. Occasionally the patient passes through a brief period of typical cyclic albuminuria before the health of the kidneys is finally re-established.

Coincident and progressively with this improvement in the condition of the urine the patient's general health improves in other respects. Strength returns to the muscles, and color to the face. The backaches, headaches, and digestive disturbances grow less and less, and finally disappear. Unless the cardiac and vascular degenerations have progressed beyond the stage at which a restoration to health or comparative health is still possible, the dyspnoea and circulatory disorders accompanying chronic Bright's disease also improve in varying degree.

Such is a general outline of the progress of patients after operation in the favorable cases. Among my patients were eight physicians, upon each of whom I performed bilateral renal decapsulation for chronic Bright's disease. Three of them (Cases Nos. 35, 36, 39) are dead, while two others have only recently been operated upon. The remaining three have favored me with letters regarding their condition since operation, and have kindly given me permission to publish them. None of the three has as yet recovered health; they are merely booked as improved. Their experience, however, so well illustrates the progress of the other patients who are still improving after operation, without having as yet attained a cure, that I cannot refrain from citing them.

CASE No. 20.—Male, physician, 26 years of age. Family history as regards liability to kidney affections very bad, five members of his immediate family having died of renal hemorrhage. Five attacks of grippe between 1896 and 1900. Severe hæmaturia for three days during last attack and some blood in the urine ever since. Chronic Bright's disease was first recognized in July, 1900. Decapsulation of both kidneys for bilateral chronic parenchymatous nephritis was performed on January 27, 1902. The last time I saw the patient was in November, 1902, when he was suffering from a severe cold accompanied by hematuria and an exacerbation of his chronic nephritis. Under date of January 24, 1903, the doctor writes: "Comparing my condition of health

during the twelve months prior to my operation in January, 1902, with that of the twelve months succeeding, I feel greatly encouraged, and am confident that whereas there was a progressive though gradual decline in health before operation, there has been even a more marked, yet also a very gradual, improvement since. At times the course of improvement has been interrupted by acute outbreaks, which in every case were the result of colds; but the general tendency toward what has seemed complete recovery has not been altered. At the present writing I consider myself far from well, yet I must admit that to all appearances I am a stronger, healthier man than when I first discovered the existence of my nephritis two and a half years ago.”*

CASE No. 22.—Male, physician, aged 36 years. Father died of chronic Bright's disease. Patient has had chronic Bright's disease for three years past. On March 26, 1902, I performed bilateral renal decapsulation for right and left chronic diffuse nephritis. Under date of January 19, 1903, the doctor writes: “Since my operation I have taken no drugs of any kind, have not restricted my diet in any way, and have attended to a general practice without missing a day. This is the first winter in three years that I have not suffered from cold hands and feet. In 1901 and 1902 my hands were so cold that my patients would complain of them when I found it necessary to make an examination of any kind. I am now entirely free from all head symptoms, whereas formerly I suffered intensely from headaches. The pain in the back peculiar to those suffering from Bright's disease has ceased entirely. Formerly I suffered with pain in the calves of the legs, but never feel it now. In 1901 and 1902 I suffered from palpitation of the heart, which would wake me at night; never have it now. My pulse, formerly full and bounding, is now much improved. I have lost that feeling of lassitude and weakness, and can now work all day, where formerly I would get tired in a few hours. That peculiar powdery condition of the skin of the hands has almost entirely gone. I receive constant unsolicited evidence of my improved health from the remarks of my patients commenting on my improved appearance now as compared with formerly.”†

*For further history of this patient, consult Case No. 20, page 186.

†For further history of this patient, consult Case No. 22, page 192.

CASE No. 37.—Male, physician, 51 years of age. An attack of diphtheria in 1876 was followed by general paralysis lasting five months. After that his health was never good. In 1885 his eyesight failed, and retinitis albuminurica and chronic Bright's disease were diagnosticated. A varying amount of œdema, uræmic headaches, backaches, and attacks of gout have been the symptoms for seventeen years past. In 1886 the doctor retired from professional work and sought recuperation for three and a half years in a mild climate in the Middle West. Finding that the climate did him more good than anything else, the doctor resolved to spend his life in that locality and established a sanitarium chiefly for the reception and treatment of cases of chronic Bright's disease. There he remained for twelve years, taking care of himself and his patients, until he heard of renal decapsulation for chronic Bright's disease, when he hastened to New York and asked me to operate upon his kidneys. The operation was performed on June 2, 1902, and disclosed bilateral chronic diffuse nephritis. Under date of January 19, 1903, the doctor writes: "I can only state that the operation did me a whole lot of good. I was operated upon June 2, 1902, and on July 12 I went to work again. I gradually gained strength and flesh, my color improved, and the uræmic headaches disappeared. By September the general dropsy had entirely disappeared; but for the past two months there has been some reaccumulation of fluid in the abdomen, and I am suffering from digestive disturbances. I sometimes fear that I have some liver complication. I am at work, however, and feel better than I have at any time for the past five years."*

I may add that the urine of each of the three medical patients quoted has shown a steady tendency, in spite of occasional setbacks and interruptions, to return to a normal standard.

Of about the same tenor as the above are the reports from the other patients who are registered as improving. Of the twelve patients thus classed the urine of one is at present free from albumin and casts, one has reached the stage of cyclic albuminuria without casts, two have a trace of albumin without casts, while in eight, favorable changes in the condition of the urine exist, but are less marked. All the patients but one report improved general health as going with the improvement in the

*For further history of this patient, consult Case No. 37, page 222.

renal secretion. The one exceptional patient suffers much from headache and digestive disturbances, although the condition of the urine is steadily improving.

We come, finally, to the cures of chronic Bright's disease after renal decapsulation, which number nine survivors and one patient, Case No. 11, who died an accidental death after being cured of her former kidney affection. To be classed as a cure the following conditions must be fulfilled in a given case: The urine must remain free from albumin and casts, and the daily urea output be normal, or approximately so, for a period of at least six months following the verification of the disappearance of albumin and casts, and the patient must be free from the symptoms of chronic Bright's disease from which he or she formerly suffered. All of the nine cases listed in the table have fully met the above requirements. The patient who died an accidental death after being cured of chronic Bright's disease, and the patient who was cured of chronic Bright's disease, remained cured for four years, and is at present suffering from a relapse, are not included in the list.

Nine patients, therefore, remain cured at periods of time varying from one year and nine months to over ten years after operation, the duration of cure for the nine cases averaging a little over four and one-third years. Eight of the cured patients had chronic interstitial nephritis; one had chronic diffuse nephritis. It is true that these earlier cases, as a rule, represented milder types of chronic Bright's disease than those operated upon in 1902. Yet the progress being made by the latter toward health is essentially the same in character and kind, although, corresponding to the longer period of existence of the disease, slower than that of the earlier cases. It must be recalled that the 1902 series were all inveterate cases of severe, complicated and far advanced chronic Bright's disease, a series the equal of which in total average severity may not, perhaps, be encountered in any year to come. Taking this fact into account, the showing made in the sum total of improvement presented by the surviving patients of 1902 must be considered as remarkably gratifying and encouraging. It gives rise to the hope that a number of them may figure in the list of cures of my next report.

There remain for brief mention eleven patients operated upon during the latter half of 1902. The death of one of these, Case No. 47, has already been detailed. Of the remaining ten, all but

TABLE OF AUTHOR'S CASES OF CHRONIC BRIGHT'S DISEASE CURED BY OPERATION.

Case No.	Known existence of chronic Bright's disease prior to operation.	Date of operation.	Variety of chronic Bright's disease.	Time from operation to final and permanent disappearance of albumin and casts from urine.	Date of last examination of urine.	Period of observation from operation to last examination of urine.	Duration of cure.
1.	1 year	20-XI-1892 Right kidney.	Chronic interstitial nephritis.	2 months.	4-II-1903	10 years and 2 months.	10 years.
4.	?	11-I-1896 Both kidneys.	Chronic interstitial nephritis.	4 months.	18-I-1903	7 years.	6 years and 8 months.
6.	?	10-I-1898 Both kidneys.	Chronic interstitial nephritis.	1 month.	21-I-1903	5 years.	4 years and 11 months.
7.	2 months	14-I-1899 Both kidneys.	Chronic interstitial nephritis.	5 months.	22-I-1903	4 years.	3 years and 7 months.
8.	?	6-III-1899 Both kidneys.	Chronic interstitial nephritis.	4 months.	20-I-1903	3 years and 10 months.	3 years and 6 months.
12.	?	5-XI-1899 Both kidneys.	Chronic interstitial nephritis.	2 months.	4-II-1903	3 years and 3 months.	3 years and 1 month.
13.	?	30-XI-1900 Right kidney. 19-IV-1901 Left kidney.	Chronic interstitial nephritis.	5 months.	23-I-1903	1 year and 9 months.	1 year and 4 months.
15.	1 year and 6 months	15-IV-1901 Both kidneys.	Chronic interstitial nephritis.	7 months.	4-II-1903	1 year and 9 months.	1 year and 2 months.
16.	1 month	6-V-1901 Both kidneys.	Chronic diffuse nephritis.	7 months.	20-I-1903	1 year and 9 months.	1 year and 2 months.

one are, at the present writing, progressing satisfactorily. The time elapsed since operation is, however, too short to speak of final results.

The great majority of my patients returned to their usual vocations within two months after operation. Among those who thus resumed their places in life were quite a number who had either been bedridden or invalided to the extent of being disabled for work for months, and, in a few instances, for years, prior to operation. As a rule, the ordinary restrictions of diet usually imposed upon sufferers from chronic Bright's disease were cast off by my patients after operation, and but a minority of them received any further medical treatment. I have always, however, urged upon them the desirability of placing themselves under the constant professional care and supervision of their family physician, whose co-operation with the surgeon I am convinced is necessary to secure the best results.

The general practitioner, on the other hand, in the present state of our knowledge, owes it to himself and to his patient to accord practical recognition to two important facts. The first of these facts is that chronic Bright's disease, at least in its earlier stages, before irreparable and fatal damage has been inflicted upon the kidneys, the heart, the blood vessels and the nervous system, is curable or susceptible of amelioration by renal decapsulation. The second fact is that renal decapsulation in the *early* stages of chronic Bright's disease is, in competent hands, attended with little or no risk to life. The practical application of these facts is self-evident.

This paper is presented as a report of progress, and, taken in conjunction with the writer's previous publications on the same subject, is believed to fairly reflect the actual present status of our knowledge of the treatment of chronic Bright's disease by renal decapsulation. It was my original purpose to present in tabular form full details of each of the fifty-one cases in which I have operated upon kidneys the seat of chronic Bright's disease. Such a course, however, would have unduly lengthened a communication already too long, and would, in addition, have served no useful purpose, inasmuch as all deductions of practical value which can be legitimately drawn at the present time have been sufficiently set forth in the text. Possibly such a detailed tabulation may, for one reason or another, prove desirable in a future

report dealing with a larger number of cases and longer periods of observation.

In conclusion, permit me to present the following:

Summary of results of renal decapsulation for chronic Bright's disease in author's fifty-one cases, embracing forty-seven operations upon both kidneys and four operations on one kidney only:

Seven patients died within seventeen days after operation.

Seven patients died at periods after operation varying between two months and eight years, the average period of life after operation being one year and eight months.

Two patients do not show improvement satisfactory in every respect.

Twenty-two patients are in various stages of satisfactory improvement and progress toward health at periods varying between two months and fifteen months after operation. The urine of several of these is at present free from albumin and casts. They have not, however, passed the probationary period of six months of normal urine, before the expiration of which no patient is entitled to a place on the list of cures.

One patient, after a cure extending over a period of four years, again has chronic Bright's disease. One of her kidneys only was operated upon.

Nine patients were cured of chronic Bright's disease and remain cured at periods after operation varying from one year and nine months to ten years, the average duration of cure being over four years. For details see table.

Three patients disappeared from observation after leaving hospital, and no trace of them can be found.

RENAL DECAPSULATION FOR PUERPERAL ECLAMPSIA.*

BY GEORGE M. EDEBOHLS, M. D.

(Reprinted from the *New York Medical Journal*, June 6, 1903.)

The purpose of this communication is to present renal decapsulation as a further resource, additional to those already at our command, in the treatment of puerperal eclampsia of renal origin. The renal origin of the eclampsia is insisted upon, as renal decapsulation is manifestly out of place in the absence of evidences of involvement of the kidneys. A discussion of the etiology, symptoms, and treatment other than by renal decapsulation, of puerperal eclampsia is beyond the scope of the present paper.

Renal decapsulation was first proposed and performed by the writer (b, c, f) for the cure of chronic Bright's disease. The encouraging results obtained led to a tentative extension of the operation to other diseased conditions of the kidneys, such as acute hemorrhagic nephritis, acute pyelonephritis with miliary abscesses, and polycystic renal degeneration (g). It needed but the occasion to suggest the application of renal decapsulation to the treatment of puerperal eclampsia of renal origin.

The occasion offered in a case of puerperal eclampsia in the management of which I was asked by my friend, Dr. James R. Wood, to co-operate.

CASE.—The patient, a primipara, aged twenty-three years, married in August, 1901. Her last menstruation ended on June 22, 1902. A severe attack of typhoid fever confined her to bed during the entire month of October, 1902. During the following two months she appeared to be as well as could be expected. In

*Read before the American Gynæcological Society, Washington, D. C., May 13, 1903.

January, 1903, slight œdema of the lower extremities and albuminuria were noted. On February 11, the face became puffy, the patient manifested pronounced uræmic symptoms, and the urine on boiling became solid with albumin. The percentage of albumin proved beyond the capacity of the Esbach albuminometer to determine. Innumerable small hyaline and granular casts, with a few epithelial, composite, and waxy casts, were found on microscopical examination of the urine.

During the following two days the uræmic manifestations, headache, nausea, vomiting, mental confusion, drowsiness and mild coma became gradually more pronounced, in spite of various measures of treatment carried out by Dr. Wood. The first convulsion occurred very suddenly on Friday, February 13, at 10.30 p. m. It was of severe character and protracted duration, but was finally controlled by chloroform by a hastily summoned neighboring practitioner. A second convulsion occurred at 3.20 a. m., and a third at 7.30 a. m. of the 14th; both were again controlled by chloroform.

I saw the patient for the first time with Dr. Wood at her home on February 14, at 10.30 a. m. She was in a drowsy and semicomatose condition, complaining, at more conscious moments, chiefly of headache and nausea. There was moderate œdema of the face and lower extremities, the temperature was normal, but the pulse, though not increased in frequency, was full and hard, and respiration was perceptibly quickened. The foetus was alive, as denoted by heart sounds and movements. The cervix was long, hard, and firmly closed; there were no indications of beginning labor. In the interests of mother and child the induction of premature labor was decided upon, conditionally on the advent of a further convulsion.

A fourth severe convulsion occurred at noon of February 14, and at 3 p. m., the child being still alive, although the heart sounds were perceptibly feebler than in the morning, accouchement forcé was begun. The patient was placed upon the table, but immediately after coming under the influence of chloroform a fifth severe convulsion, lasting fifteen minutes, occurred. The long, rigid and well closed cervix was incised on either side to its full length, the membranes rupturing during the process. The forceps was applied to the head of the child, which presented in right occipito-posterior position, and delivery of foetus and placenta was

completed in the course of a little over an hour. The uterus was at once lightly packed with gauze to secure contraction and guard against hemorrhage. The child, a boy, was born alive, but breathed only a few times after delivery and could not be revived. Hemorrhage was insignificant, although the incisions of the cervix tore rather deeply into the substance of the uterine body, and the patient was returned to bed in good condition.

On the following day, Sunday, February 15, no further convulsion having occurred since forced delivery, although the patient still continued drowsy and semicomatose, the two cervical incisions were closed by interrupted sutures of chromic catgut, nine sutures being required on each side. A small laceration of the vagina near its outlet was also repaired.

On Monday, February 16, at 2.30 p. m., forty-six hours after delivery, the sixth convulsion occurred. This was followed at 5 p. m., 5.30 p. m., and 10.30 p. m. by three further severe convulsions, chloroform being each time required for control. The tenth and last severe convulsion took place on the morning of Tuesday, February 17, at 9 o'clock. The urine, which in great part was voided unconsciously, continued laden with albumin and casts, although to a slightly less degree than before delivery, and the patient between the convulsions was permanently in a semicomatose condition.

At this stage of the case, after consultation with Dr. Wood, and in view of the failure of all other means to prevent recurrence of the convulsions, renal decapsulation was proposed for the purpose of obtaining control of the uræmia. The patient being semi-conscious and not in condition to reach a decision for herself, the matter in all its aspects and bearings, including its novelty and untried character, was laid before the husband, a man of far greater than average intelligence, who thereupon requested that the operation be performed.

On February 17, 1902, exactly seventy-two hours after delivery, the patient was for the third time placed upon the operating table. Chloroform was administered by Dr. Wood, and, with the assistance of Dr. W. G. Vincent, I performed decapsulation of both kidneys in exactly twenty-three minutes, counting from the first incision to completed closure by suture of both wounds. The kidneys were found in a condition of acute or subacute inflammation, slightly enlarged, turbid from cloudy swelling, fatty and

slightly soft to sight and touch. There was not the slightest indication of a tight fit, let alone tension, of the capsule proper, which was easily separated from the entire surface of each kidney, cut away close to the renal pelvis, and removed *in toto*.

There was no further convulsion after operation, and all the graver symptoms of uræmia rapidly disappeared, so that two days later the patient, although weak, was in her normal mental condition. Recovery from that time on proceeded much as in a normal puerperium. The wound over each kidney, as well as the cervical and vaginal wounds, healed by primary union. The patient was kept in bed for three weeks, as is my custom after the performance of renal decapsulation. Since that time she has been up and about and enjoying as good health as ever.

Chemical and microscopical examinations of the urine, made daily for two weeks after operation, showed rapid and progressive improvement in the condition of the kidneys. On February 28, eleven days after operation, fairly frequent hyaline and granular, with occasional epitheliated and waxy casts, and one-fortieth of one per cent. of albumin were noted. A month later a faint trace of albumin and an occasional hyaline cast represented the only abnormalities in the urine. At the present writing, eleven weeks after renal decapsulation, the urine is very nearly normal and the patient otherwise in the enjoyment of perfect health.*

The history of the case may be epitomized as follows: Primipara, aged twenty-three. Typhoid fever during the fourth month of pregnancy. Symptoms of nephritis first noted during the seventh month. Uræmia and eclamptic seizures near the end of eighth month. Five severe convulsions within sixteen hours, followed by forced delivery during fifth convulsion. Freedom from convulsions for forty-six hours after delivery. Then return of convulsions, six severe convulsions, not counting minor manifestations, occurring in eighteen hours. Decapsulation of both kidneys. No further convulsions, and rapid restoration of complete health.

The case narrated is believed to represent the first instance of operation upon the kidneys undertaken with a view to the cure of puerperal eclampsia. The idea of treating puerperal eclampsia of renal origin by decapsulation of the kidneys is the logical out-

*For further history of this patient, consult Case No. 53, page 251.

come of the success attending renal decapsulation, at the hands of the writer, in chronic Bright's disease and other conditions of the kidney, as already alluded to. A further idea underlying the adoption of the treatment described in the present case is based upon the acknowledged efficacy of phlebotomy in the control of uræmic seizures, whether occurring in or out of the puerperium. If blood letting is good in itself, why should not the abstraction of blood directly from the kidneys, which necessarily accompanies renal decapsulation, prove still more efficacious?

Renal decapsulation was performed in our case for convulsions beginning sixteen hours before delivery and persisting three days after completion of labor. It is admitted that our patient *might* have recovered without renal decapsulation, but the indications, deepening uræmia and increasing violence of the convulsions, certainly did not point that way.

The practical deduction from the happy result obtained is that we possess in renal decapsulation an additional potent resource in the treatment of puerperal eclampsia of renal origin. Personally, I should not hesitate to apply it again in a similar instance. I would even go further and propose a trial of renal decapsulation in puerperal convulsions of nephritic origin occurring prior to the beginning of labor. The mother would certainly be benefited, and the occurrence of premature delivery or the necessity of inducing it might possibly be averted.

My clinical experience has amply demonstrated that renal decapsulation is the most powerful, and practically a uniformly successful, means of increasing the urea output of the kidneys and of thus counteracting the dangers of uræmia. My own line of work does not often bring me in contact with obstetrical cases or cases of puerperal eclampsia. Those of my colleagues, however, who are connected with lying-in hospitals could speedily determine the value of renal decapsulation in puerperal eclampsia of renal origin, and to them I recommend a trial of the procedure.

SOME CORRESPONDENCE RELATING TO QUESTIONS OF PRIORITY.

(Reprinted from the *New York Medical Journal*, November 7, 1903;
November 21, 1903; and December 5, 1903.)

THE FERGUSON-EDEBOHLS OPERATION, OR RENAL DECAPSULATION.

CHICAGO, October 26, 1903.

To the Editor,

Sir: Sufficient reports of renal decapsulation based on reliable clinical data have accumulated to indicate that the operation has been established. Two well-known and distinguished surgeons residing widely apart had apparently for years been working simultaneously and independently along a similar line, and considerable dispute has arisen as to the priority of introducing the operation of renal decapsulation to the profession. I have no other interest in the subject than that of justice. After looking up the records, I am convinced that to Dr. Alexander Hugh Ferguson is due the credit of priority of introducing the operation of renal decapsulation for nephritis. I was present at a meeting of the Chicago Gynæcological Society, on December 16, 1898 (see records), when Dr. Ferguson advocated distinctly and practiced "the peeling off of a thick pathological capsule as a thing desirable" in nephritis. Dr. Ferguson published a paper on the surgical treatment of nephritis on March 11, 1899. Dr. G. M. Edebohls' first paper appeared, on renal decapsulation for nephritis, April 22, 1899. So far as I am aware, from reading the medical journals, Dr. Edebohls has done more to place the operation extensively before the profession, but that does not alter the fact that Dr. Ferguson's publications were made prior to those of Dr. Edebohls. It is not strange in these days of widespread medical knowledge that two surgeons should accomplish the solution of the same problem independently, and hence I suggest due credit be accorded to each from

known published data. I would propose a compromise, and call renal decapsulation the Ferguson-Edebohls operation.

BYRON ROBINSON.

RENAL DECAPSULATION.

NEW YORK, November 7, 1903.

To the Editor,

Sir: In a letter published on page 918 of your issue of to-day, Dr. Byron Robinson proposes to call renal decapsulation the Ferguson-Edebohls operation. Your correspondent, for one, would respectfully beg leave to object to Dr. Robinson's proposition, and for two reasons. In the first place, the custom of designating an operation by the name of a surgeon is to be deprecated on general principles, as tending to confusion and unnecessary burdening of an already burdensome medical nomenclature. Such a course is pardonable and tolerable only when, and only as long as, a good and expressive name for the operation itself cannot be found or coined. Such is not the case in the instance under consideration. In the second place, renal decapsulation, viewed simply as an operative procedure, is original with neither Ferguson nor Edebohls. E. Rose, reported by R. Wolff (*Deutsche Zeitschrift für Chirurgie*, XLVI., 1897, 533-582), strips off the entire capsule proper as a routine measure in every nephropexy, and his nephropexies extend back to 1883, a period antedating the entrance of either Ferguson or Edebohls upon the field of renal surgery. E. Lobstein (*Beiträge zur klinischen Chirurgie*, XXVII., 1900, 251-280) also decapsulates the kidney entirely in every nephropexy, and a number of surgeons, including the writer, have now and then unintentionally performed complete renal decapsulation in attempts to deliver or expose a refractory kidney for exploration or further operative procedure. These remarks apply to complete renal decapsulation; partial renal decapsulation, as part of the technics of nephropexy, has been common property of surgeons the world over for nearly twenty years past.

Renal decapsulation or nephrocapsectomy clearly, concisely and fully expresses the nature of the operative procedure under consideration, and should displace the use of such terms as the Edebohls or the Ferguson-Edebohls operation.

G. M. EDEBOHLS.

RENAL DECAPSULATION FOR NEPHRITIS.

SCRANTON, PA., November 25, 1903.

To the Editor,

Sir: Two recent letters to the editor, one from Dr. Byron Robinson, on the Ferguson-Edebohls Operation, or Renal Decapsulation, published in your valued *Journal* of November 7, 1903, page 918, and one from Dr. G. M. Edebohls, on Renal Decapsulation, published in your issue of November 21, 1903, page 1014, have interested me, and for a personal reason I request the privilege of a few comments. I was present at the meeting of the American Medical Association at New Orleans, in May, 1903, when Dr. A. H. Ferguson read his paper advancing his claims to priority in connection with the surgical treatment of nephritis, and in the discussion I took the liberty of emphatically denying the correctness of those claims. From having always kept in close touch with all the literature of the subject, I felt sure of my ground, but at the time was not prepared with the exact data and dates necessary to fortify my position. Since then I have always felt that it was due to Dr. Ferguson, as a matter of justice, to produce these data and facts, and the letter of Dr. Robinson has recalled that duty to my mind.

Dr. Robinson, in his letter, supports the claim advanced by Ferguson (*Journal of the American Medical Association*, July 4, 1903) to priority of *publication* of renal decapsulation. There can be no question, and there does not appear to be one with either Robinson or Ferguson, as to who deserves the credit of first *proposing* and of first *performing* renal decapsulation with the deliberate purpose in view of bringing about a cure of chronic Bright's disease; that honor belongs indisputably to Edebohls. Let us examine now as to whether and as to how far Ferguson's claims to priority of *publication* will bear close scrutiny and investigation. To do so intelligently we must first distinguish between renal decapsulation as a mere technical operative procedure, and renal decapsulation performed for the cure of nephritis. The latter constitutes the question at issue.

Dr. Robinson, in his letter, quotes Ferguson as stating at a meeting of the Chicago Gynæcological Society, on December 16, 1898, that he considered "the peeling off of a thick pathological capsule as a thing desirable." This is a part statement only; the

official report of the transactions of that meeting (*American Gynecological and Obstetrical Journal*, XIV., 1899, page 197) quotes Ferguson as stating verbatim: "I do not wish to be misunderstood with reference to removing the normal capsule of the kidney. I condemn this, and do not do it. But the peeling off of a thick pathological capsule is a thing that is desirable." In connection with these remarks it should be remembered that they were made in the course of a symposium on movable kidney; that they referred to renal denudation as a part of the technics of nephropexy; and that nephritis, either acute or chronic, was not under discussion. But Edebohls has shown in his letter that renal decapsulation as a part of the technics of nephropexy, or accidentally performed in the course of attempts to expose or deliver the kidney, is original with neither himself nor Ferguson, having been performed by E. Rose as a routine procedure in nephropexy long before the entrance of either Ferguson or Edebohls upon the field of renal surgery. Furthermore, the *essential* of the Edebohls operation of renal decapsulation for nephritis consists in *invariably* removing the kidney capsule, whether normal or pathological, whether loose or tight.

Thus much for Robinson's support of Ferguson's claims. Ferguson himself does not rely upon this support, possibly recognizing its weakness, but bases his claims to priority of publication upon the report of two cases made by him to the Chicago Academy of Medicine (*Journal of the American Medical Association*, March 18, 1899, *not* March 11, 1899, as incorrectly cited by both Ferguson and Robinson). A careful perusal of the history of these two cases will show that the patients were not operated upon for the cure of nephritis, that in fact the nephritis was only disclosed by subsequent microscopical examination of pieces of kidney tissue removed at the operation. To quote Ferguson himself, more than four years later (*Journal of the American Medical Association*, July 4, 1903, page 8), "in these two instances no positive diagnosis was made before operating." In his original paper, Ferguson states that in the first of the two cases under discussion "no diagnosis was made, but a stone in the kidney was suspected, and exploration advised;" while in the second an operation was undertaken upon the diagnosis of "septic kidney." By what stretch of the imagination can these two operations upon which Ferguson bases his claim to priority of publication be claimed by Fer-

guson as operations undertaken for the cure of nephritis? Furthermore, proof, if such were needed, that these were not operations for nephritis is furnished by the details of the two operations as described by Ferguson. In the first operation, after needling the kidney in search of suspected stone, "the fat being removed, the peeled-off capsule of the kidney was sutured to the lumbar fascia on either side of the wound, thus suspending it in the lumbar region;" a case of exploratory puncture of the kidney followed by nephropexy with removal of the fatty capsule, and denudation, necessarily concomitant features. In the second operation "the capsule was split and peeled from two-thirds of the kidney;" the kidney was then explored with blunt needles, its pelvis opened by incision through the kidney, and "the capsule was sutured to the lumbar fascia;" an exploratory nephrotomy followed by nephropexy.

Ferguson, in his recent contribution, charges that "the date of this publication (*Journal of the American Medical Association*, March 18, 1899) has been overlooked by Dr. G. M. Edebohls in all his articles." This is undoubtedly true, and for the same reason, probably, that the article in question was overlooked by both Guit ras and myself in our independent diligent searches of the literature—that reason being that the publication alluded to by Ferguson *does not* appear under the head of original articles, but is embodied in the report of a discussion before the Chicago Academy of Medicine. It first appeared as an original article in the *Medical Standard* of June, 1899, and its publication there is cited both by Guit ras and by Edebohls, whose contribution to the surgical treatment of nephritis appeared in the *Medical News* of April 22, 1899. In this paper Edebohls details six cases of operation upon kidneys, the seat of chronic nephritis, in one of which, performed January 10, 1898, the operation was deliberately undertaken with a view to bringing about a cure of chronic nephritis diagnosticated as such before operation. In view of the fact already shown, that Ferguson's two operations, performed early in 1899, were *not* for nephritis, the date of publication of Ferguson's article appears quite irrelevant. Ferguson's additional statement that "it will be seen in the description of my experience, our work (that of Ferguson and Edebohls) has been developing contemporaneously," is true only when supplemented by the statement that the operative work of Edebohls upon kidneys affected with nephritis, beginning as it does in 1892, antedates by many

years the beginning of Ferguson's work in the same direction. It may appear strange, also, that Ferguson's claim to priority of publication should be advanced only more than two years after the appearance of the formal proposition of Edebohls (*Medical Record*, May 4, 1901, page 691) to treat *all* cases of chronic Bright's disease by renal decapsulation.

From what has been said, the conclusion is inevitable that neither Ferguson nor Edebohls was the first to perform renal decapsulation as such, and that Ferguson was neither the first to perform nor the first to publish renal decapsulation for the cure of nephritis. Priority of proposal, priority of actual performance, and priority of publication of renal decapsulation for the cure of nephritis belong indisputably to Edebohls.

Edebohls (*Medical Record*, April 26, 1902) and Guitéras (*New York Medical Journal*, May 17, 1902), independently of each other, and at about the same time, thoroughly investigated the history of the development of the surgical treatment of nephritis, and the conclusions reached by them after a full, fair and critical review of the literature are practically identical. These conclusions are tabulated by Edebohls, as far as his own work is concerned, in the form of five specific claims, each of which I have taken the pains to investigate searchingly, and each of which I find to be absolutely correct and unassailable. Guitéras summarizes his researches as follows: "It is, therefore, with great satisfaction that I am able to say conscientiously that Edebohls, of New York, is entitled to the full credit of having been the first actually to perform an operation on the kidney for the sole and primary purpose of curing chronic Bright's disease, and that his only possible competitors for this claim are Harrison, who operated in acute cases with the intention of relieving the symptoms and preventing their becoming chronic, and Israel, who operated in cases of chronic nephritis for the relief of hematuria and renal colic, and who himself emphatically disclaims any intention of introducing the surgical treatment of the type of cases of chronic nephritis." To cite but one from among the many appreciative comments upon the work of Edebohls which have appeared in the literature of the past two years, I quote from an editorial in the May, 1902, number of the *Canadian Journal of Medicine and Surgery*: "In an editorial, it would not be easy to do more than mention some of the more important features of Dr. Edebohls'

paper. The paper is of great value, and its author deserves credit for his surgical skill, and, in our opinion, greater credit for his observations on the restoration of urinary secretion in diseased kidneys. He has elaborated a working theory of the *restitutio ad integrum* of a nephritic kidney after its capsule has been stripped off, by observations made on the living bodies of patients cured by his operation."

In conclusion, I may be permitted to reiterate that Edebohls is, without question, the originator and father of the treatment of nephritis by renal decapsulation, and to add my conviction that if ever it was proper to designate an operation by the name of a surgeon, renal decapsulation for nephritis should certainly be called the Edebohls operation. This honor, waived by Edebohls in his letter, on the score of principle, has been cheerfully accorded him by a number of medical authors, including such men as Caillé, Rotch and Tyson. The last of these, Tyson, in a paper read before the Pennsylvania State Medical Society, and published in the *New York Medical Journal and Philadelphia Medical Journal* for October 10, credited the origin of surgical treatment for the cure of Bright's disease entirely to the efforts of George M. Edebohls. No one who knows Professor Tyson will, for a moment, doubt his honesty of purpose, nor will he, on the other hand, question the accuracy of assertions made by this distinguished physician and famous urologist, noted the world over for his adherence to the principles which accentuate both of the qualifications, honesty and accuracy. For my own part, I wish to say, further, in regard to the offering of this letter, that the innate modesty of Dr. Edebohls swings him too far away from that justice to which the opinion of even one's self entitles him; so I, for one, shall continue in the future, as I have in the past, to refer to the operation of renal decapsulation for nephritis as *Edebohls' operation for the cure of Bright's disease*.

RICHARD H. GIBBONS.

RENAL DECAPSULATION, NEPHROCAPSECTOMY (EDEBOHLS) AND NEPHROLYSIS (ROVSING).

BY GEORGE M. EDEBOHLS, M. D.

(Translated from the *Zentralblatt für Chirurgie*, February 20, 1904.)

In an article published in the *Gazetta degli ospedali e delle cliniche*, 1903, XXIV., page 521, Maragliano makes the following statement: "L'operazione eseguita da Edebohls e la nefrolisi proposta da Rovsing in ultima analisi sono un solo ed unico intervento." This statement is based upon a more or less widespread misconception as to the nature of the two operations under discussion; to correct this misconception is the object of the present paper.

The essential feature of renal decapsulation as proposed and practiced by the author for the cure of chronic nephritis, consists in the removal of the capsule proper of the kidney, after first detaching it from the surrounding fatty capsule and from the surface of the kidney. The denuded kidney is dropped back into the fatty capsule, and the wound is closed. Both kidneys are operated upon at one and the same sitting. In seventy-two cases of chronic nephritis operated upon by the writer, bilateral decapsulation at one sitting was performed sixty-eight times, unilateral decapsulation four times. A misunderstanding concerning the nature of the operation thus briefly sketched seems scarcely possible. None the less, Vindevogel (*Médecin*, Bruxelles, April 26, 1903, p. 132), in a review of my latest publication on renal decapsulation for nephritis, is not quite certain whether I practice total excision of the *suprarenal* (!) capsules, or merely separate the latter from the kidneys.

The results of my operations for chronic nephritis, the *néphrite médicale* of the French, have been published on three different occasions. Since the publication of my second paper, the opera-

tion has found favor with American surgeons to such an extent that Guitéras (b) was able recently to report eighty-eight cases operated on by forty-two different American surgeons. Among European surgeons, on the other hand, renal decapsulation has met with less favor. If to the eighty-eight cases reported by Guitéras we add my own seventy-two operations, together with some thirty or forty operations performed by other surgeons of which I have knowledge, but which are not included in Guitéras' list, we obtain a total of some two hundred renal decapsulations for chronic Bright's disease performed up to the present time.

I have elsewhere reported cases of renal decapsulation for acute nephritis, for acute pyelonephritis with miliary abscesses, for hydronephrosis, for pyonephrosis, for polycystic degeneration of the kidneys and for puerperal eclampsia of renal origin. Whitacre obtained a complete and lasting cure of suppression of urine of eight days' duration by renal decapsulation.

The only publication upon nephrolysis which has thus far come to my knowledge is that of Rovsing himself. The object which Rovsing aims to accomplish by nephrolysis is the liberation of a kidney from compression by perinephritic thickenings and adhesions. This liberation is effected by a dissection carried either between the capsule proper and the fatty capsule, or within the substance of the latter. This dissection leaves undisturbed, or at least is meant to leave undisturbed, the relations of the capsule proper to the kidney. Rovsing, in his paper, records seventeen carefully studied and admirably observed cases, the majority of them typical cases of so-called surgical nephritis. In these seventeen cases nephrolysis was performed nine times, always upon one kidney only. As an operation by itself, that is without a concomitant decapsulation or nephrotomy, or both, nephrolysis does not appear to have as yet been performed. In Rovsing's nine cases of nephrolysis the capsule proper was partially removed six times and totally removed in one instance; that is, there were no less than seven apparently unintentional, partial or complete renal decapsulations as concomitants of the nine nephrolyses. On the other hand, renal decapsulation can never be performed without first separating the fatty capsule from the capsule proper, that is, without first performing nephrolysis. An evident tautology is, therefore, involved in the following citation

from a report by Cavaillon of a case operated upon by Jaboulay: "Le 3 juillet M. Jaboulay opère et pratique la nephrolyse de Pousson (should be Rovsing) et la nephrocapsulectomie d'Edebohls."

After a careful perusal, word for word, of Rovsing's paper, I cannot refrain from questioning his diagnosis of nephritis chronica in a number of cases reported as such. Frequently the diagnosis is based upon macroscopical appearances of the kidney observed at operation which, in my opinion, are erroneously interpreted by Rovsing. Thus we read on page 299: "The renal tissue in this part of the kidney is cyanotic, somewhat soft, presents, however, no other abnormality on macroscopical inspection;" on page 301: "The renal tissue cyanotic, otherwise normal as far as can be observed;" on page 305: "Examination of the luxated kidney shows the tissue of the upper part of the kidney after delivery to be markedly cyanotic, the denuded portions bleeding freely, while the lower half of the kidney is normal in color. Otherwise nothing abnormal is observed either on the surface or on incision of the kidney;" on page 320: "The renal tissue of the lower pole is blue and cyanotic. The upper two-thirds of the kidney are absolutely normal in appearance."

To base a diagnosis of chronic nephritis upon such findings is entirely unwarranted, and appears especially inexplicable on the part of a surgeon of Rovsing's reputation and experience. A kidney the seat of chronic nephritis always shows at operation macroscopical appearances which are unmistakable, but which differ widely from those mentioned above. To describe these appearances here would carry us too far. The general as well as the localized congestions and bloody infiltrations of the kidney described by Rovsing are solely and purely the result of traumata inflicted upon the organ during operation.

Rovsing himself lays stress upon the fact that in each of the four operations above quoted from, the liberation of the kidney from perinephritic adhesions proved so difficult that the capsule proper was (unintentionally) partially removed. An involuntary partial decapsulation was therefore performed, and the appearances above described are those presented by the kidney thus denuded of its capsule proper. Now, every surgeon of experience in operations upon the kidney is familiar with the fact that congestions, cyanotic discolorations, and even blood extravasations involving a greater or less extent of the kidney, or even the entire

organ, are apt to follow attempts to free the kidney from its surroundings and to deliver it into the wound. Clear proof that these appearances are due to manipulation of the kidney during operation is afforded by the fact that they frequently, and it might be said generally, start and spread under the eye of the operator while the operation is in progress. A seemingly normal kidney suddenly becomes dark-blue at one point; the congestion, cyanotic discoloration, and blood extravasation spread more or less slowly from this point over a more or less limited part, and sometimes even over the entire surface of the kidney. In more than five hundred personally performed operations upon the kidney I have observed this condition dozens of times.

The frequency with which Rovsing has encountered extensive adhesions between the kidney and the tissues surrounding that organ appears somewhat remarkable. The writer has met such extreme degrees of chronic perinephritis only in suppurative nephritis, in cases of renal growths, and in secondary nephrectomies. Excepting under the conditions named, chronic perinephritis, although perhaps of quite frequent occurrence, is seldom found of such intensity as to produce compression of the kidney. It is not always an easy matter to deliver a normally placed and normally attached kidney into the wound for exploration or operation. May it be that Rovsing, in some of his operations at least, mistook such normal attachments for perinephritic adhesions?

The object of the nephrolysis of Rovsing is to liberate the kidney from perinephritic thickenings and adhesions which compress the organ. The capsule proper plays no part in the plan of operation but, whenever possible, its relations to the kidney are left undisturbed. In renal decapsulation, on the other hand, we seek to establish or to create a new vascular supply for the kidney by invariably removing the capsule proper which constitutes a barrier to such new supply. Until such time as the exact *modus operandi* of both renal decapsulation and nephrolysis is adequately explained and proven, both methods must be regarded as merely empirical procedures. Nephrolysis as an operation by itself, that is, without concomitant decapsulation, nephrotomy, etc., in different combinations, has not as yet been performed. It is for this reason principally that the results reported by Rovsing cannot be looked upon as establishing his claims for

nephrolysis. According to Rovsing himself, nephrolysis is indicated only in the comparatively small number of cases of chronic nephritis associated with compression of the kidney by perinephritic indurations and adhesions.* Thus far Rovsing's procedure has found no imitators. Renal decapsulation, on the other hand, is indicated in chronic nephritis as such, simply and purely by reason of the existence of the disease. It has already come to be regarded as a beneficial procedure by internists of the highest standing, and is being performed by an ever-increasing number of surgeons.

*In his reply to the present communication, Rovsing (b) states that he has never advocated, and does not now advocate, surgical treatment for chronic Bright's disease. To quote his own words: "I wish to be understood, therefore, as advising against any operative interference whatsoever in all true cases of Bright's disease, *i. e.*, in all cases of diffuse, bilateral, non-infectious nephritis. The only condition which can be held to justify an operation in these cases is the occurrence of severe pains due to subcapsular accumulations or to other causes. In these exceptional cases, which moreover are extremely rare, the relief of pain constitutes the sole indication for operation."

THE SURGERY OF NEPHRITIS.*

BY GEORGE M. EDEBOHLS, M. D.

(Reprinted from the *New York Medical Journal*, May 21, 1904, and May 28, 1904.)

The proposition to treat chronic Bright's disease surgically by decapsulation of the kidneys, advanced by the author in 1901, came in the nature of a surprise, it might almost be said of a shock, to the medical profession in general. The general practitioner, in spite of the rapid and almost bewildering advances made and being made in the surgery of the various viscera, was scarcely prepared for a surgical invasion of the large field of so-called medical nephritis. The traditions of surgery, on the other hand, had ever insisted upon the fact that no surgical operation of any kind must be undertaken in any part of the body, except on a vital indication of immediately pressing urgency, upon a patient suffering from chronic nephritis. To advocate an operation upon the diseased kidneys themselves under these conditions might well be regarded as the extreme limit of rashness. Such, indeed, it would have been in reality, had not various chance observations, made by the writer and other surgeons, of the disappearance of symptoms of chronic nephritis following an operation upon the kidney or kidneys preceded the new departure. These chance observations led the writer, as long ago as 1898, to advocate and perform operations upon the kidney, under certain conditions, with the avowed purpose of bringing about a cure of chronic Bright's disease. Further favorable experience prompted him, in 1901, to advance the broad proposition to treat all cases of chronic Bright's disease, or rather to treat chronic Bright's disease, *as such*, by decapsulation of the kidneys. This action was not taken without a full and realizing sense of the tremen-

*Read by title before the Medical Society of the State of New York, February 4, 1904.

dous and far-reaching responsibilities involved. Fortunately, the outcome, in the writer's hands and opinion, at least, has fully justified the correctness of the position assumed at the time with not a few misgivings.

RENAL DECAPSULATION AND THE SURGICAL TREATMENT OF CHRONIC BRIGHT'S DISEASE PRACTICALLY SYNONYMOUS.

The early history, all of recent date, of the development of the surgical treatment of chronic nephritis, has been elsewhere fully elucidated by the writer, as well as by others, and need not be here repeated. Since the publication of the writer's proposition to treat chronic Bright's disease by decapsulating the kidneys, decapsulation being supplemented, when indicated, by nephropexy, the terms "renal decapsulation" and "surgical treatment of chronic nephritis" have come to be regarded as synonymous. Indeed, there is no record of any other form of operation having been or being at present performed for the express purpose of curing chronic Bright's disease, if we except nephrotomy, performed in two or three instances by Pousson, and possibly the nephrolysis of Rovsing. Of nephrotomy, Rovsing voices the accepted opinion when he says that he considered it at present dangerous and not even permissible to treat aseptic nephritis by nephrotomy; while Pousson himself appears to have become a convert to renal decapsulation.

RENAL DECAPSULATION OR NEPHROCAPSECTOMY, AND NEPHROLYSIS.

A word in regard to nephrolysis, an operation which in some quarters has been confounded, and even considered identical, with renal decapsulation, may here be not out of place. The idea underlying Rovsing's nephrolysis is the liberation of a kidney from compression exercised or supposed to be exercised upon it by perinephritic thickenings and adhesions. The kidney is dissected from its surroundings, leaving the capsule proper in undisturbed relation and contact with the kidney. Renal decapsulation, on the other hand, has for its avowed purpose the removal of the capsule proper, with a view to the creation of a new and increased blood supply to the diseased kidney. Nephrolysis, indeed, is a necessary adjunct or accompaniment of each and every decapsulation, it being manifestly impossible to remove the capsule proper

without first detaching it, and with it the kidney, from the surrounding tissues. Nephrolysis as an operation by itself has never been performed, not even by Rovsing himself. In several of the nine cases of nephrolysis reported by that writer, nephrotomy was performed in addition; and in no less than seven of the nine, partial or complete unintentional decapsulation was also performed. Rovsing's operations of nephrolysis, moreover, were all performed upon but one kidney, whereas the surgical treatment of chronic Bright's disease implies, in the vast majority of cases, operation upon both kidneys. Nearly all of Rovsing's cases were examples of so-called surgical nephritis; in a number of instances in which an uncomplicated simple nephritis was thought to have been encountered, the diagnosis, as I have elsewhere (1) attempted to show, lies open to grave doubt.

The procedure of Rovsing has found no imitators, so far as the literature, or rather the absence of any literature, on the subject enables us to judge. Renal decapsulation, on the contrary, has been taken up in America by a number of surgeons, so that Guitéras was able to collect from the literature and by means of correspondence, eighty-eight cases operated upon by forty-two different American colleagues. In Europe, renal decapsulations for chronic nephritis have been reported by Jaboulay, Sorel, as reported by Le Nouëne, Kümmell and Witzel. Adding to the above my own seventy-two cases, and about fifty unpublished cases of other surgeons of which I have personal knowledge, we find that decapsulation of the kidney or kidneys for chronic Bright's disease appears to have been performed up to the present time in from two to three hundred cases.

RENAL DECAPSULATION FOR CONDITIONS OF THE KIDNEYS OTHER THAN CHRONIC BRIGHT'S DISEASE.

In addition to becoming established as the sole surgical procedure in the treatment of chronic nephritis, as such, the operation of renal decapsulation has been extended to the treatment of diseased conditions of the kidney other than chronic Bright's disease. The writer has elsewhere (g) reported cases in which he has performed renal decapsulation for acute nephritis, acute pyelonephritis with miliary abscesses, hydronephrosis, pyonephrosis, polycystic degeneration of the kidneys, and (i, o) puerperal eclampsia of renal origin. Le Nouëne also reports a case in which

Sorel performed renal decapsulation upon a patient suffering from pyelonephritis with miliary abscesses, while Whitacre has obtained an immediate and lasting cure of acute suppression of urine, of eight days' standing, by renal decapsulation. The advantages of a new and increased blood supply to *any* kidney struggling to throw off *any* diseased action are manifest, and I find, on looking over the record of my kidney operations of the past two years and a half, that whatsoever other operation I may during that time have performed upon a kidney, I have almost invariably, in addition, decapsulated the organ. More recently, so distinguished a surgeon as Roswell Park also advises decapsulation of every kidney operated upon for any reason.

THE MODUS OPERANDI OF RENAL DECAPSULATION.

How does renal decapsulation act in bringing about a cure of chronic Bright's disease? The working theory advanced by the author, and upon which he based his procedure of renal decapsulation for chronic Bright's disease, was that by removal of the impervious capsule proper, an opportunity was created for the formation of new vascular connections between the blood vessels supplying the secreting structures of the kidney on the one hand, and the blood vessels of the tissues surrounding the kidney on the other. How this increased circulation improves the working coefficient and gradually restores the health of the kidney has been abundantly set forth in a previous communication (c) and need not be reiterated. The views there expressed as to the possibility of the regeneration of the secreting structures of the kidneys after their destruction by inflammation have recently received abundant confirmation from the very interesting and instructive experimental work of Thorel. As to the fact of the *invariable* establishment of an abundant new vascular supply to the kidney after decapsulation, the final word, as we shall see further on, remains yet to be spoken.

EXPLANATION OF THE IMMEDIATE EFFECTS OF RENAL DECAPSULATION.

While the creation of a new blood supply to the kidney readily explains the clinically established fact of continued and lasting improvement in the work of a diseased kidney after decapsulation, it fails to explain fully and satisfactorily the immediate ben-

eficial effects so often witnessed. The theory uppermost in the minds of nearly all writers upon the subject, that the immediate good effects of decapsulation are due to the relief of renal tension, is shattered by the stubborn fact that, in practically all cases of *chronic* nephritis operated upon, no such renal tension can be demonstrated to exist. I have never in any of my operations for *chronic* Bright's disease found the capsule proper tightly stretched over and compressing the kidney. Generally it fits the kidney in a normal manner, and sometimes the kidney appears to be even somewhat shriveled or contracted within a loosely fitting capsule. Even in far advanced chronic interstitial nephritis, with greatly thickened capsule, the reduction in size of the kidney appears to be due rather to contraction of the new fibrous interstitial tissue of the kidney itself than to compression of the capsule.

Jaboulay is inclined to attribute the immediate good effects of decapsulation to improved nutrition of the kidney, owing to vasomotor influences initiated by stretching and irritation, during operation, of the sympathetic nerve fibers entering the kidney with the blood vessels of the renal pedicle or root. While Jaboulay's explanation is possibly hypothetical, far-fetched, and insusceptible of either absolute contradiction or confirmation, yet I am inclined to think that if we condense or translate his explanation into the simple word *massage*, we shall happen very near the truth. In other words, I believe that the immediate good effects of decapsulation can be reasonably explained by the necessary manipulation, amounting in reality to a massage of the kidney, during operation. The immediate stimulation of the existing natural blood supply of the kidney thus effected, supplemented by the relief to congestion afforded by the direct abstraction of more or less blood from the organ during operation, suffices for the immediate wants of the kidney and carries it along until its supplementary new circulation becomes established.

Our knowledge of both the physiology and the pathology of the kidney is still very meager. Much, very much, remains yet to be investigated and learned before we can afford to discard successful methods of treatment, more or less empirical though they be, in the management of cases of chronic Bright's disease. The future may, and probably will, bring us such demonstrations of the *modus operandi* of renal decapsulation as may make the foregoing attempted explanations appear exceedingly crude and even

ridiculous. The advanced experimental work of Flexner, which appears to indicate that the most virulent of the nephrotoxines are formed in the comparatively blood-free cortical portion of the kidney, is at least extremely suggestive in relation to one possible explanation of the good effects of renal decapsulation.

THE FORMATION OF A RENAL CAPSULE AFTER RENAL DECAPSULATION.

One invariable effect of renal decapsulation, as observed in all experiments upon animals, is the formation of a new capsule proper replacing the one removed at operation. The only two autopsies upon the human subject which I find recorded—one by Jewett and one by Cutler—note the same formation of a new capsule. In two cases of my own, in which the patients died four months and fifteen months, respectively, after renal decapsulation, and in each of which both kidneys were carefully studied after death by Dr. John H. Larkin, of the Pathological Laboratory of Columbia University, a well-formed new capsule proper was found enveloping each of the four kidneys. The new capsule becomes distinctly organized in from three weeks to three months after operation; it is sometimes thicker, sometimes thinner, but always more succulent than the original capsule, and always vascular.

The observations of Johnson, of San Francisco, showing the presence of two layers, an outer and an inner, of the capsule proper in dogs, are interesting. I have on one occasion encountered exactly the same conditions in both kidneys in a renal decapsulation performed upon a man twenty-seven years of age. As experimenters upon dogs in France and Italy do not mention this characteristic, the interesting question arises as to whether possible racial differences in animals of the same species used for experimentation may not explain some at least of the varying results obtained.

VASCULAR CHANGES FOLLOWING RENAL DECAPSULATION.

The vascular changes produced in the kidney and its surroundings by decapsulation have been studied by Balthazard and by Johnson in dogs; by Albarran and Bernard, by Gayet and Bassan, by Fabris, and by Ferrarini in rabbits; by Claude and by Anzilotti in both species of animals. The majority of these ex-



FIG. 1.—Ferrarini. Section through cortex of kidney, new capsule, and adjacent tissues after renal decapsulation performed upon a rabbit. The formation on a liberal scale of new blood vessels in the new capsule is well shown. These blood vessels connect on the one hand with the vessels of the adjacent tissues and on the other hand with the vascular system of the kidney.

periments were made upon the kidneys of healthy animals. Where nephritis entered at all as a factor in the experiments, it was always the *acute* form; yet it is precisely the effects of decapsulation in *chronic* nephritis that we desire to learn. In normal kidneys, as well as in acute nephritis, there is no need for an increased circulation, and for that reason, perhaps, none is supplied by nature. It is somewhat strange that whereas most French and American observers speak of the difficulty of producing nephritis in dogs, our Italian confrères, Fabris, Ferrarini, and Anzilotti seem to have no difficulty in producing *acute* nephritis in both dogs and rabbits by the injection of either cantharides or the toxins of diphtheria. The chronic forms of nephritis seem to be the difficult ones to produce.

While Johnson states that "in no case was there any considerable anastomosis between the renal and perirenal blood vessels," the other observers named, with the exception of Fabris, and perhaps of Albarran and Bernard, who are not very clear upon the subject, have all found exactly the contrary. Dr. Larkin informs me that he has experimented with renal decapsulation on various species of animals with varying results even in the same species, sometimes finding new blood vessels formed on a most extensive and elaborate scale, and at other times noting little or no new vascularization. The preponderance of evidence thus far is clearly in favor of the formation of new vascular connections between the kidney and surrounding tissues, in the majority of animals of various species, after decapsulation of normal or of acutely inflamed kidneys. Nevertheless, it is difficult to understand why some experimenters nearly always fail to find the new vessels, while Ferrarini, for instance, invariably finds an abundant new vascularization, and is able to furnish us with a very fine illustration (Fig. 1) showing most beautifully the direct connection of the vessels of the new capsule with the vessels of the kidney on the one hand, and with those of the surrounding structures on the other. The effects of renal decapsulation in animals suffering from *chronic* nephritis, *the* thing we should like to know about, have not been studied, owing to the difficulty of producing chronic nephritis in animals.

In addition to the observations already detailed, made with a view to establishing the existence or otherwise of a new circulation after decapsulation of the kidney, one or two series of ex-

periments of a more practical nature have been made in connection with the subject. Gayet and Bassan decapsulated one kidney of a rabbit, and some time afterward killed the animal. On tying both renal arteries and injecting the aorta it was found that the decapsulated kidney received a supply of the injected fluid from the newly formed vessels of the periphery, while its fellow remained uninjected.

Anzilotti, however, has tested the potentialities of decapsulation in a still more practical manner. He finds that renal decapsulation affects neither the urine nor the general health of healthy animals; that the capsule is reconstructed in about twenty days; that the new capsule is thicker and more succulent than the original capsule; that after thirty days the new capsule is always well vascularized, with the formation of new arteries and veins; that the blood channels in the tissues around the kidney are increased in number and size; and, finally, that after 150 days, the time limit of his experimentation, there is no tendency to sclerosis in the new capsule, the vessels of which connect directly and freely with both the renal vessels and those of the surrounding tissues. It would lead us too far to attempt even to outline Anzilotti's further interesting and exceedingly practical investigations as to the controlling influence exercised by renal decapsulation over the destructive processes initiated in the kidney by ligation of the renal artery and of the renal vein.*

AUTOPSIES AFTER RENAL DECAPSULATION IN MAN.

Reports of autopsies performed some time after renal decapsulation in the human subject are rather rare; in fact, I have been

*Further experiments with renal decapsulation upon animals have been made and published by Asakura, Boncz-Osmolovsky, Emerson, Hall and Herxheimer, Luxardo, Stursberg, Thelemann and Van Cott. The present status of experimental work with renal decapsulation upon animals is probably correctly summed up by Portner. In a review of the animal experiments of Asakura and of Stursberg, which establish the fact that a new vascular supply to the kidney is established by decapsulation, Portner (*Monatsberichte für Urologie*, 1904, ix., 253) says: "We agree with Stursberg that animal experimentation cannot be expected to throw any further light upon the question of the value of the Edebohls operation. The point is no longer whether the theory of Edebohls regarding the formation of new vessels upon the surface of the kidney is correct. The only thing that remains to be proven is that by the creation of such a new collateral circulation we are able to cure or improve Bright's disease. This question can be settled in no other manner than by observations upon the human subject."

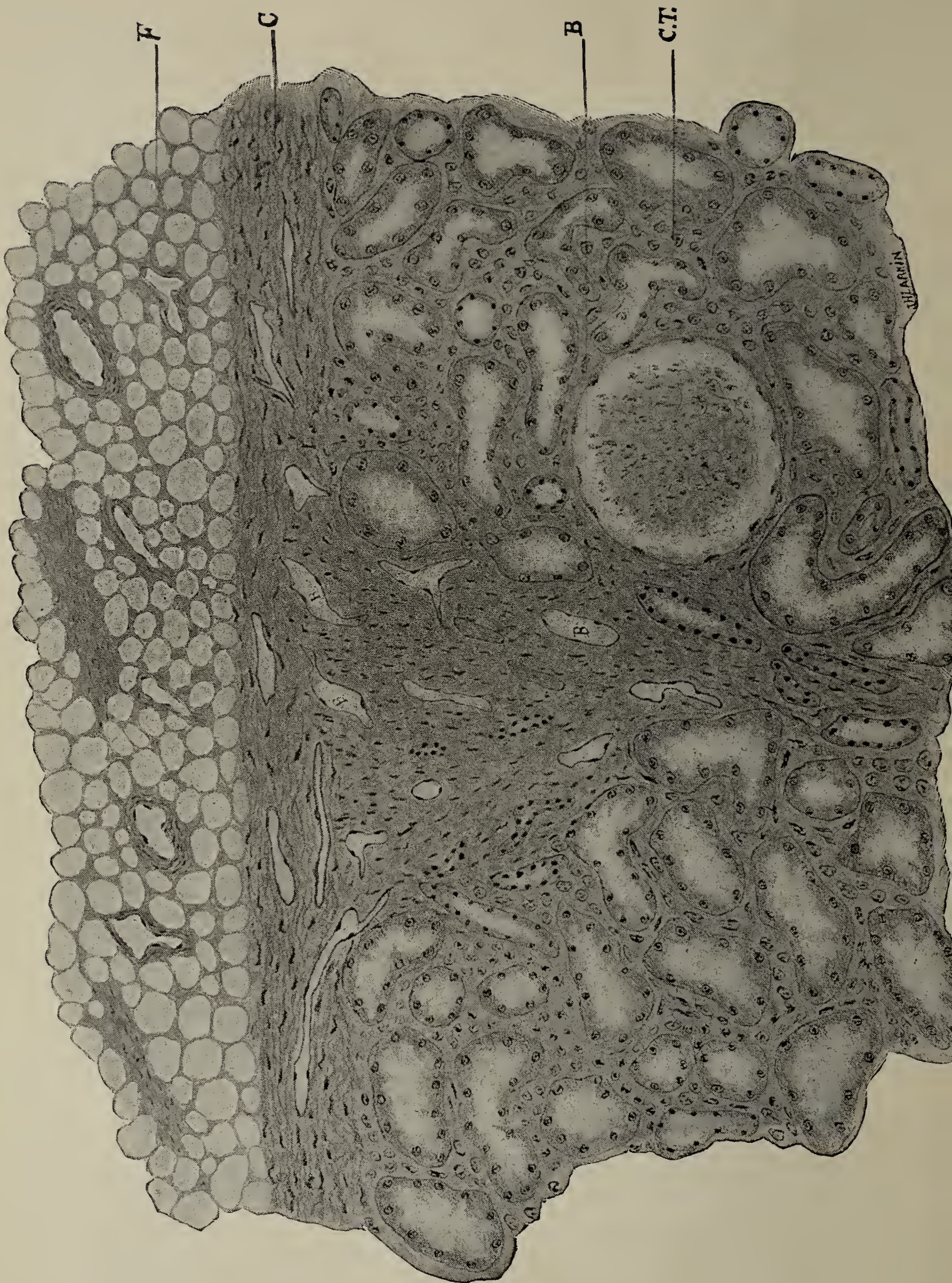


FIG. 2.—Larkin. Section through human kidney cortex, new capsule, and fatty capsule. From a woman who died of pneumonia four months after decapsulation of the kidneys for chronic Bright's disease. F, fatty capsule. C, well vascularized new capsule proper. From the inner aspect of the new capsule numerous new blood vessels, a few of which are marked B, are seen penetrating the kidney along a wedge-shaped tract of connective tissue.

able to find but two such reports in the literature. Both of these reports, as already stated, mention the formation of a new capsule, but are not satisfactory upon the subject of the establishment of a new circulation. Jewett's report of an autopsy on a case of chronic nephritis operated on by Wasdin is not precise about dates, and does not bear evidences of careful microscopical examination. His statement that "to neither kidney was there any newly formed blood supply through adhesions" must be taken with the allowances stated. In Cutler's report of an autopsy performed after decapsulation by Elliott, no examination with reference to a new or collateral circulation was made. The only careful and complete examination of two kidneys of the same subject, removed at autopsy four months after decapsulation, appears to have been made by Dr. John H. Larkin in a case of my own. Dr. Larkin made a very minute and painstaking study of a large number of serial sections of both kidneys and the surrounding tissues. As a result, he was able to establish clearly the existence of an abundant vascularization of the new capsules, of direct connection between the vessels of the new capsules and those of the perinephric fat, and of direct penetration of the newly formed vessels of the new capsule along connective tissue paths into the substance of the kidney; thus affording, in the only two human kidneys thus far carefully studied some time after decapsulation, as clear corroboration as could be desired of the probable correctness of the writer's working theory of the formation of a new and increased blood supply to the kidney after decapsulation. Larkin will publish the result of his investigations in the above case as soon as his studies upon two additional kidneys obtained from a patient of mine, who died fifteen months after decapsulation, are concluded. Through the courtesy of Dr. Larkin, I am permitted to reproduce one of the illustrations (Fig. 2) of his forthcoming article.

THE QUESTION OF COMPRESSION OF THE KIDNEY BY THE NEW CAPSULE.

The thought naturally arises, and has frequently and in many places been expressed, that the new capsule formed after decapsulation must inevitably contract and lead to injurious compression of the kidney with return of symptoms. This *a priori* reasoning, however, is neither based upon actual observation nor in harmony

with the results of animal experimentation or with the clinical facts. We have already seen that Anzilotti found no tendency to sclerosis of the new capsule in dogs 150 days after renal decapsulation. I have, on a number of occasions, during the course of years, while performing nephropexy, unintentionally removed the entire capsule proper. Three patients whose kidneys were thus denuded more than ten years ago are under my observation at the present writing. They are all in the enjoyment of most excellent health, and the urine of each of the three is perfectly normal—conditions scarcely compatible with damage to the kidneys from compression. In line with these observations are the experiences of Edmund Rose, as quoted by Wolff. Rose, as a routine measure, completely decapsulates every kidney upon which he performs fixation; yet in examining twenty of his patients operated on between three and fourteen years previously, he found the urine of each of the twenty absolutely normal—proof, surely, that the new capsule undoubtedly formed is not doing the least harm.

For my own part, in view of the above facts and of the permanency and the steadily improving character, in the majority of instances, of the good clinical results obtained in my decapsulations for chronic Bright's disease for many years past, I give the question of possible danger from contraction of the new capsule no further thought.

A few remarks relative to some points more recently arisen in connection with our subject, or perhaps not sufficiently touched upon or elaborated in former communications, may not be out of order. Familiarity on the part of the reader with my previous writings upon the same subject is presumed, as it would lead to too great length to attempt even an abstract here.

THE INDICATIONS FOR RENAL DECAPSULATION FOR CHRONIC NEPHRITIS.

The indications for renal decapsulation for chronic Bright's disease, from the writer's present point of view, are not difficult to state. I say from my present point of view very advisedly, because the confidence and positiveness with which I now advise decapsulation for chronic Bright's disease have only been, and in the nature of things *could* only be, obtained as the result of extended favorable personal experience. During the stage of

development of this confidence, it was my custom, when consulted with reference to the advisability of operation, to present all the facts in connection with decapsulation, as far as I knew them at the time, to the patient, if of average or greater than average intelligence, for his or her careful consideration, and then to await a request from the patient for operation or the expression of a decision not to have an operation. The great and serious responsibility incurred in advising a surgical operation for chronic Bright's disease, advice so diametrically opposed to *all* the teachings and traditions of both medicine and surgery, was ever before my mind, and dominated even my last report of but a year ago. But gradually accumulating experience and knowledge of the final results in a sufficiently large number of cases to entitle me to an approximately final judgment have changed all this. I now consider myself derelict to duty imposed by knowledge gained from experience if at the present stage of the question, and with three conditions fulfilled, I fail to advise renal decapsulation for every sufferer from chronic Bright's disease who consults me and who has a reasonable expectation of not less than a month of life without operation.

These three conditions are: first, the clear and unequivocal establishment of the diagnosis of chronic Bright's disease; second, the absence in the given case before us of absolute contraindications to *any* operation; third, the possibility of securing the services of a surgeon reasonably familiar, from practical experience, with the surgery of the kidney. Before discussing these conditions, I may be permitted to call attention to a practically important distinction in connection with the thirty-day limitation of probable life without operation. If this limit has been gradually reached in the course and by virtue of the steady tendency of the disease to a fatal termination, the patient's chances of help from operation are decidedly less than when, for instance, an acute exacerbation of chronic nephritis has suddenly jeopardized life. The most certain symptom of impending dissolution, as far as my experience goes, is the characteristic dyspnoea or air hunger of the final stages of chronic Bright's disease, whether the air hunger be due to involvement of the lungs, to threatening acute dilatation of the heart, or to poisoning of the respiratory centers.

The first of the three conditions named, the clear and unequivocal establishment of the presence of *chronic* Bright's disease,

can fortunately be fulfilled in any case, though it may in exceptional and individual instances require a brief period of observation and several urine examinations to reach a final positive conclusion. To enter further upon the question of diagnosis would carry us too far.

The second condition, the absence of absolute contraindications to *any* operation, may profitably occupy our attention for a moment. The finding of an *absolute* contraindication to an operation for the cure of chronic Bright's disease means for the victim not only that he must abandon all hope of life, but also that he must, as such cases go, even prepare for *early* death. The question of contraindications to renal decapsulation for chronic Bright's disease has already been touched upon in previous papers, and need but be supplemented here by a few remarks based upon the results of more extended experience.

RENAL DECAPSULATION INDICATED IN ALL VARIETIES OF CHRONIC NEPHRITIS.

In the first place, it may be stated that the variety of chronic nephritis, whether interstitial, parenchymatous, or diffuse, need no longer enter into the question of indications and contraindications to decapsulation. My experience has abundantly demonstrated that good results may be obtained from operation in every one of the varieties of nephritis named. Of forty-seven surviving patients operated on at periods varying between six months and twelve years ago, whose present condition is known, seven suffered from chronic parenchymatous nephritis, seventeen from chronic interstitial nephritis, nineteen from chronic diffuse nephritis, and four from a combination of right chronic interstitial and left chronic diffuse nephritis. Of the seven patients with chronic parenchymatous nephritis, three are cured, two are progressing satisfactorily toward cure, and two are improved. Of the seventeen cases of chronic interstitial nephritis, eleven are cured, three are progressing toward cure, one is improved only, and two are unimproved. Of the nineteen cases with chronic diffuse nephritis, six are cured, eight are progressing satisfactorily toward cure, two are improved, and three are unimproved. Finally, of the four cases of combined right chronic interstitial and left chronic diffuse nephritis, one is cured, two appear to be progressing satisfactorily toward cure, and one is unimproved. The above figures represent

the status of my patients on February 1, 1904. A greater proportion of cases of interstitial nephritis have been cured simply because my earlier operations were mostly upon cases of interstitial nephritis, and in these cases, therefore, the average length of time elapsed since operation is greater than obtains in my diffuse and parenchymatous cases.

AGE AS A CONTRAINDICATION OF RENAL DECAPSULATION.

I have already in a previous paper expressed myself in reference to age as well as to cardiac and vascular changes as contraindications to renal decapsulation. I have there said that these contraindications are relative in character only, and that in their practical application judicious individualization must be practiced. In regard to age as a contraindication, I find on looking over my records that I have performed decapsulation of both kidneys for chronic Bright's disease upon nine patients who at the time of operation were fifty years, or over, of age. Three of the nine, aged fifty years, sixty-two years, and sixty-seven years, respectively, died within a week of operation; three died at ulterior dates; one, aged fifty years, three weeks after operation; one, aged fifty-six years, five months and a half after operation; and one, aged fifty-one years, ten and a half months after operation. Of these six patients, only the last two were at all benefited by operation, one enjoying two months of comparative health before he again began to fail, and the other experiencing but moderate improvement extending, however, through the remainder of his life. It is but fair to state that of the six patients aged between fifty and sixty-seven years who died soon after, or at periods more or less remote from, operation, in only one was operation advised by the writer. The other five patients, three of whom were physicians, either requested or demanded operation with a full knowledge of the special risks involved in their cases. Of the surviving three of the nine, one, aged fifty-one years, is cured twenty months after operation; one, aged fifty years, is almost well one year and a half after operation; and one, sixty-three years of age, is doing only fairly well seven months after operation.

CHANGES IN THE HEART AND BLOOD VESSELS AS CONTRAINDICATIONS TO RENAL DECAPSULATION.

In regard to contraindications arising by virtue of the exist-

ence of cardiac and vascular derangements, I have but little to add to what I have already stated; that little, however, seems to me both interesting and important. During the course of the year past I have had the unexpected pleasure a number of times, on again seeing and examining patients at periods remote from operation, to find that very pronounced cardiac hypertrophies and derangements charged against them on my records as existing prior to operation, had become totally insignificant and in some cases had even entirely disappeared as the health of the kidneys was gradually regained. These changes for the better in the condition and action of the heart I have come to regard as the surest indication that the health of the kidneys is improving. In this connection, and as illustrating a possible life insurance aspect of renal decapsulation, I will but mention one case, that of a physician, thirty-six years of age, who for three years before operation had suffered from chronic Bright's disease with enormous hypertrophy of the heart and such violent and tumultuous heart thumping that he was unable to sleep at night. An application for life insurance made two years before operation was turned down. Fourteen months after operation his heart was perfectly normal in every way, and he again applied for insurance to one of the three large life companies of New York, stating the facts of his long illness with chronic Bright's, of the decapsulation of his kidneys, and of his steady favorable progress towards health since operation. The medical examiner pronounced the heart normal and found a trace of albumin and a few granular casts in his urine, the daily amount of the latter being 1800 c.c., with a specific gravity of 1013. On the strength of all the facts, a conditional policy for \$5,000 was issued to the happy applicant, who has a family to provide for. Thus it has come to pass, strange as it may read, that we are curing heart disease by operating upon the kidneys.

Possibly the one cardinal point that should guide us in advising for or against decapsulation for chronic Bright's disease in the presence of cardiac derangements, especially enlargements of the heart and degeneration of the heart muscle, is the fact as to whether the compensation of whatever lesion may be present is sufficiently good to warrant the assumption that the patient will safely stand the anæsthesia. In this connection, it must be borne in mind that practically all cases of chronic Bright's disease of

any duration have more or less hypertrophy of the heart. As long as the enlargement of the heart is mainly hypertrophic and not due to dilatation, as long as the hypertrophy is concentric, an anæsthetic may be administered with a reasonable degree of safety. It is only when dilatation of the heart predominates over the hypertrophy that the danger of sudden death from acute dilatation of the heart is ever present, and no general anæsthetic should be administered to such a patient. The most ominous single auscultatory sign of predominant dilatation of the heart and danger of sudden death is, in my opinion, insufficiency of the aortic valves as denoted by an intermittent aortic regurgital murmur, occurring, say, every third, fourth, or fifth beat, or even less frequently. When this condition is clearly present and cannot be removed by suitable medication, the patient is *very* near the end of life and I advise against operation.

RETINITIS ALBUMINURICA AS A CONTRAINDICATION TO RENAL DECAPSULATION.

The presence of retinitis albuminurica is another element in a case which should be considered as demanding careful consideration in determining for or against renal decapsulation. In this connection œdema or dropsy of the retina must be differentiated from true retinitis with hemorrhage and exudates. The former may disappear the same as a dropsy in any other part of the body. The importance of true retinitis albuminurica in relation to a contemplated renal decapsulation lies in the fact that it is one of the late manifestations of chronic Bright's disease. Its occurrence signifies that a time has come when the general changes produced throughout the body by the disease can scarcely be made good short of a miracle, and in themselves lead to death, even if the function and health of the kidney can be in greater or less degree restored by operation. In sixty-seven per cent. of cases of chronic Bright's disease in which retinitis albuminurica occurs the patients will die within a year after the development of the eye affection, while of the remainder, none, perhaps, will survive two years. The very occasional occurrence of an exception only proves this rule, which is based upon large statistics.

Among my own 72 patients operated on up to the end of the year 1903, I find that nine had retinitis albuminurica at the time of operation. Not one of the nine is alive to-day, all having died

within a year after operation, and only two having experienced decided benefit from operation. A further significance of retinitis albuminurica lies in the fact that it denotes such widespread disease of the vascular system that the danger of rupture of blood vessels in any part of the body is always imminent, often leading to death from cerebral, pulmonary, intestinal, and other hemorrhages. While not prepared, therefore, to state that the presence of retinitis albuminurica, especially in a young patient, is an *absolute* contraindication to decapsulation, I would, in the light of my experience to date, weigh very carefully all the pros and cons in such a case before advising operation. Larger experience, however, is needed before the last word can be said in this matter.

The last of the three conditions mentioned as requisite to be fulfilled, when advising renal decapsulation for chronic Bright's disease, is that the services of a surgeon reasonably familiar, from practical experience, with the surgery of the kidneys can be secured. Otherwise the additional risk from unnecessarily prolonged anæsthesia, let alone the extra danger of the operation itself, and the possibility even of its not being successfully completed, are drawbacks which may outweigh the possible benefits to be derived from operation. Should renal decapsulation for chronic Bright's disease receive anything like general recognition, the present and rising generations of surgeons can be depended upon to qualify speedily to meet any demand that may arise for expert services in this connection.

THE TECHNICS OF RENAL DECAPSULATION.

My method of performing renal decapsulation remains practically the same as first described in my paper of 1901 (c). Nor is it likely that any material or important changes in the method will be heralded in the near future; decapsulation as an operative procedure is perfectly satisfactory as it is. The only slight alteration or modification that has been suggested since I first proposed the operation, is *always* to anchor the decapsulated kidneys to the muscles of the back. Such fixation of the kidney, which in itself is neither desirable nor indeed always possible, has been proposed on the erroneous supposition that it is possible to get a better new vascular supply from the muscles than from the perinephric fat. The experiments of Anzilotti on animals have shown

the fallacy of this supposition. Anzilotti, in some of his experiments, imbedded the denuded kidney in a muscular bed, and found that, as compared with simply dropping the kidney back into its fatty capsule, the new capsule formed was thicker and denser, but *never* more vascular after the former than after the latter procedure. Now a thicker, and especially a denser capsule, is exactly what we do *not* desire. The logical deduction is that, in operating for chronic Bright's disease, fixation of the kidney should be added to decapsulation under exceptional circumstances only, *i. e.*, when the kidney is both movable and the mobility of the kidney, in itself, gives rise to decided symptoms. This is the rule which I have followed, and from which, for the present, I see no reason for deviating. As to pulling down a kidney found well sustained by its natural supports in its normal place, as obtains with the majority of kidneys affected with chronic Bright's disease, and deliberately and in cold blood sewing it fast in an unnatural position, that, from my viewpoint, would be a crying surgical sin.

The only other point that I desire to emphasize anew is the necessity of securing healing by first intention, in order to obtain the best results from renal decapsulation. Nephritics do not stand suppuration well; and the difference between primary union and suppuration may mean for the patient the difference between life and death. In my own work, I have been fortunate enough to obtain primary union in practically all of my renal decapsulations. Infection occurred in only two of my patients, in both instances from causes that were unavoidable; both patients ultimately made good recoveries.

INTERPRETATION OF THE GOOD EFFECTS OF RENAL DECAPSULATION.

By some who are either unable or unwilling to believe in a surgical treatment for chronic Bright's disease, the rest in bed of the three weeks after operation has been invoked to explain the undeniable and striking immediate good effects of renal decapsulation—the return of color and strength, the disappearance of dropsies, headaches, backaches, digestive and circulatory disturbances, the improvement in the condition and action of the heart and cerebrospinal centers. The fact is ignored or overlooked that many of these same patients, who were so greatly benefited by operation, had prior to operation spent months and, in a number of

instances, even the greater part of a year at a time, in bed without experiencing the slightest improvement worthy of the name. The changes in the patient's condition and general health after decapsulation, on the contrary, are nearly always impressive, and in some cases simply marvelous. The improvement, moreover, is progressive, continuing and increasing even after the patient has left his bed and resumed his place and work in life. The correct explanation of these phenomena lies so near as to be readily overlooked, and is to be sought and found in the improved work of the kidneys, as denoted especially by the increased daily urea output, promptly following decapsulation. Indeed, decapsulation puts any diseased kidney in the best possible condition gradually to regain its health, and while regaining its health to do the best work possible for that particular kidney to accomplish. As a lay writer has expressed it, "with the surgeon's help the kidneys take off their coats and go to work in their shirt sleeves."

UNILATERAL CHRONIC NEPHRITIS.

In my publication of 1901 I reported eight instances of unilateral nephritis among nineteen cases of chronic Bright's disease on which I had operated. This feature of my report evoked, perhaps, more comment than any other, and met with dissent and incredulity in not a few quarters. It was even used in an effort to discredit all my work and observations by some writers who were unable to divorce themselves from the preconceived traditional notion that chronic nephritis must in all cases and *at every stage* of the disease be a bilateral affection. In the publication named I have given my interpretation of my observations, and have said all that need be said upon this subject. Since then a number of both physicians and surgeons of the highest rank have expressed their conviction, based upon enlarging experience, that chronic Bright's disease is not always a bilateral affection, thus fully sustaining my position.

That I happened to meet with so large a proportion of cases of unilateral nephritis in my earlier work was because my first operations were mainly upon milder and less advanced cases of chronic Bright's disease. Following the publication of these cases, there came for operation a series of very far advanced cases, many of them in the final stages of the disease, and in the last fifty-three cases only three instances of unilateral nephritis were observed.

Adding to these the eight cases of unilateral nephritis observed in the first nineteen patients, we have a grand total of seventy-two cases, composed of eleven cases of unilateral and sixty-one cases of bilateral chronic nephritis.

SOME GENERAL CONSIDERATIONS CONCERNING
RENAL DECAPSULATION.

In conclusion, it is at once fully and freely conceded by the writer that a major surgical operation is not by any means an *ideal* treatment for chronic Bright's disease. The same may be said, however, for surgical measures which cure in other diseases in which the resources of medicine fail. When the medical science of the more or less near future shall have found, as I confidently hope and believe it will find, some simpler, more readily and generally applicable, safer, and equally efficient treatment, let us say cure, for chronic Bright's disease, then will renal decapsulation become a memory and a matter of history. For the present, in view of the helplessness of medicine in the presence of established chronic Bright's disease, the advance in treatment represented by renal decapsulation should be welcomed by every physician called upon to treat chronic nephritis. Nor is the physician justified in taking the position that only after all other measures have failed, as fail they must, will he resort to decapsulation. That is giving neither the operation nor his patient a fair chance, to which the latter, at least, is certainly entitled. For even at the present writing we are able to affirm, as the result of experience, that renal decapsulation applied early in the course of a chronic nephritis, and in the absence of complications, is *almost* free from danger in expert hands, and is *almost* a certain cure. Why, then, wait until the inevitable all-around breakdown in health, which is sure to come in every case of chronic Bright's disease, forces us to operate in the last stages of the disease, perhaps upon a dying man or woman, with all the gloom that invests such an occasion, or else to abandon the unfortunate sufferer to his or her fate? In my own experience I have had no less than three patients with chronic Bright's disease die on the very day appointed for operation, all idea of any operation having to be abandoned at the last moment, and I recall with especially painful vividness the passing away of a valuable life while the final preparations for operation were going on in an adjoining room.

That physicians are not unwilling on occasion to try in their own persons methods of treatment which promise more than those heretofore known to medical science, seems indicated by the fact that of seventy-two persons whose kidneys I have decapsulated for chronic Bright's disease up to the end of 1903, no less than ten were physicians, and two others were members of the immediate families of physicians; one physician and his wife, indeed, were operated upon on the same afternoon.

Much of what has been written above rests upon the assumption that the curability of chronic Bright's disease by renal decapsulation is a proved fact. To establish the truth of this fact a *sufficiently* large number of cases of chronic Bright's disease observed for a *sufficient* length of time after renal decapsulation was an absolute essential. This essential condition has now, perhaps, been fulfilled to a reasonable degree in the practice and experience of the writer. On three previous occasions, in 1899, in 1901, and again in 1903, I reported the results, to date of publication, of my attempts to cure chronic Bright's disease by operation. The results and conclusions which I had obtained and reached at each of the periods named, although they possessed only a conditional value, limited by the fact that they were based upon a comparatively brief period of observation, still indicated and foreshadowed with growing clearness the final triumph of renal decapsulation for chronic Bright's disease. As a result of my experience and observations to date, embracing seventy-two cases operated on between six months and eleven years and a half ago, no less than sixty-nine of which, by dint of unremitting watchfulness and exertion, I have been able to follow either to the termination of their lives or to the present writing, I am happy to be able to state that my expectation and hopes of years ago have been in large measure realized, and that the promise of a yet fuller realization appears bright. For renal decapsulation for chronic Bright's disease has not as yet had, and in the near future is not likely to have, a full and fair test and trial. As a rule, only severe, advanced, and often absolutely hopeless cases have thus far come to operation, and the same statement will probably still hold true whenever it may happen to be made during the course of several years to come. Yet it is not until a much larger proportion of cases of chronic Bright's comes to operation early in the course of the disease, an event not likely to happen in the very near

future, that the full possibilities for good of renal decapsulation will be realized.

I am at present engaged in collecting information concerning the outcome to date from all patients I have ever operated upon for chronic Bright's disease. As soon as possible after the completion of these investigations, I intend to issue a fourth publication of the results of my work. In this coming publication, in addition to giving the history of each patient in full detail, including uranalyses, I will also attempt an analysis of the results thus far obtained. Such a course will probably silence the objections of those critics who have found my previous communications too terse and brief, in view of both the novelty and importance of my theme; one French writer, indeed, carries this implied reproach to the extent of designating my style or diction as "telegraphic." It will also fulfil, as far as lies in my power, an obligation assumed when I first advanced the proposition to treat chronic Bright's disease as such by decapsulation of the kidneys.

RENAL REDECAPSULATION.

BY GEORGE M. EDEBOHLS, M. D.

(Reprinted from the *Medical Record*, May 21, 1904.)

One invariable effect of renal decapsulation as observed in numerous experiments upon animals, as well as in the few reported autopsies after operation in man, is the formation of a new capsule proper, replacing the one removed at operation. The new capsule becomes fully organized in from three weeks to three months after operation; it may be thinner or thicker, but it is always more succulent and vascular than the original capsule.

The striking improvement or entire disappearance of urgent symptoms of chronic Bright's disease so frequently following renal decapsulation, and the fact that a new capsule is invariably formed and takes the place of the one removed, has no doubt suggested to many minds, as it has to my own, the possible propriety or indication of a second decapsulation or renal redecapsulation, in selected cases in which, after a more or less protracted period of improvement, the clinical symptoms return or become aggravated. A prominent surgeon whose kidneys I decapsulated for chronic Bright's disease one year ago, and who at the present writing is enjoying good health, writes me that if his symptoms should return he intends to ask me to decapsulate his kidneys a second time. It remained, however, not for a surgeon, but for no less distinguished internist than Dr. E. G. Cutler, Visiting Physician to the Massachusetts General Hospital, to first give expression to this thought in print. Dr. Cutler (*Boston Medical and Surgical Journal*, 1903, CXLIX., 429), after detailing the autopsy in a case operated on by Elliott, in which for a time there was very great improvement in all symptoms, with a final and fatal recurrence of the latter, says: "It is obvious from this that if a patient does not continue to improve at the first operation of decapsula-

tion, it is no more than fair to give him the benefit of a second operation."

I have recently had occasion to decapsulate a second time the kidneys of a patient upon whom I had performed renal decapsulation two years previously. As far as my knowledge goes, this is the first and thus far the only instance in which renal redecapsulation has been performed. For that reason mainly I have thought it worth while to publish the history of the case in detail.*

C. L., male, twenty-six years of age, single, suffering from chronic Bright's disease, was referred to me for renal decapsulation by Dr. Junius T. Ireys, of Lakeside, San Diego Co., Cal.

Family history good. Patient considered himself well until the early part of 1897. The symptoms then noticed were weakness, brick-dust sediment in urine, and one severe attack of headache and vomiting. An examination of the urine on July 13, 1897, showed the presence of chronic Bright's disease. Frequently repeated urine examinations, made at various times during the past five years, always showed albumin and casts. There was marked œdema of the feet for three months in 1898; only occasional and very slight œdema since. Patient is subject to migraine, but apart from this and the symptoms above noted, there were few or no indications of poor health.

Examination, April 10, 1902. Patient's muscular condition and color good, owing to almost constant out-door life in the South, from which he has just returned. Heart, arteries, and fundus of the eye, normal. Slight œdema of feet. Examination of urine shows chronic nephritis with infection (*vide* uranalysis, April 25, 1902). Bacteriological cultures, made later on from an aseptically drawn specimen of urine, showed the infecting agents to be the *staphylococcus albus* and the *bacterium coli commune*.

First operation, May 1, 1902, at the New York Post-Graduate Hospital. Decapsulation of both kidneys, under nitrous oxide and oxygen administered by Dr. Thomas L. Bennett.

The right kidney was found contracted to about three-fourths the normal volume, irregular in outline, deformed and very hard. The capsule proper appeared slightly and unevenly thickened, but

*For an account of a second renal redecapsulation, performed since the above was written, consult Case No. 14, page 170.

otherwise normal; it was readily detached from the kidney over the entire surface of the latter. The raw kidney surface presented everywhere the typical granular appearance of advanced chronic interstitial nephritis. The left kidney was contracted to about two-thirds the normal volume; otherwise it was in the same condition as the right kidney. The capsules were completely stripped from both kidneys and cut away. Operative diagnosis: Right and left chronic interstitial nephritis, with infection. Convalescence was uneventful and both wounds healed primarily.

Soon after the operation the patient started on a tour of pleasure around the world. The last examination of urine prior to sailing, made June 23, 1902, showed no improvement over the specimen examined before operation; if anything, the renal infection appeared more active. The patient, however, felt perfectly well and had nothing especial to complain of. I did not see him again for more than a year and a half, nor was it possible during that time to obtain a specimen of urine for examination.

On January 10, 1904, the patient reappeared in New York and gave the following account of himself: For about six months following operation he appeared to be doing very well. In December, 1902, he was laid up in Japan for a week with acute suppurative pyelonephritis. A month later he passed through a similar experience in Calcutta, the second attack lasting ten days. After that the condition of his health was subject to slight fluctuations due to several minor exacerbations of the renal infection. On November 29, 1903, during a sojourn at a Southern health resort, a severe attack of acute infection, or rather of acute exacerbation of the chronic infection, developed. The attack was characterized by high fever, much headache, inflammatory swelling of the right epididymis, and the discharge of large quantities of pus with the urine. On several occasions the patient, as he expressed it, "passed three to four teaspoonfuls of pus in a solid bunch." The attack lasted for nearly a month, with varying intensity. After its termination the patient, by my advice, came North for treatment of the persistent urinary infection.

Cystoscopic examination, made January 10, 1904, showed inflammation of the prostatic urethra and of the trigonum vesicæ, with puffiness and hyperæmia of the mouths of both ureters, the mucosa of the bladder elsewhere being normal. A nearly healed prostatic abscess was still discharging small quantities of pus into

the urethra. Urine examinations during January and February (*vide* table) showed unmistakable renal infection. Bacteriological culture of an aseptically drawn specimen of urine demonstrated the infecting agents to be the *staphylococcus albus* and *bacterium coli commune*.

The urinary infection was treated by the internal exhibition of urotropin in large and cumulative doses and by vesical irrigations and deep urethral applications of a silver preparation. The cystitis and deep urethritis were soon brought under control, but the renal infection persisted. There was, however, at no time after the treatment was begun, any rise of temperature or other indication of exacerbation of the chronic infection.

Increasing anæmia and deepening uræmia were the alarming features of the case during this period. A blood examination made January 13, 1904, gave: Erythrocytes, 3,678,000; leucocytes, 8,853; hemoglobin, 80 per cent. A second count, made February 5, 1904, yielded: Erythrocytes, 3,533,000; leucocytes, 10,113; hemoglobin, 60 per cent. The fluctuations in the daily output of urea may be seen from the appended table of uranalyses.

After the vesical and urethral infection was removed, there appeared to be no immediate further indications for surgical treatment, and I requested my friend, Prof. A. Caillé, to take charge of the case. For the last two months of his life the patient was constantly under Dr. Caillé's care and observation. Early in February frightful uræmic headaches and an extensive uræmic infarction of the right lung with considerable hemorrhage developed, and Dr. Caillé advised a redecapsulation of the kidneys, with a view to increasing the urea output. The advice was declined, and for nearly two months more the patient went on from bad to worse, the atrocious uræmic headaches being almost constant in character. On March 30 uræmic convulsions supervened, followed by continuous coma and great swelling and discoloration of the face. On this day, also, complete suppression of urine occurred, the bladder being repeatedly catheterized and always found empty. On March 31 the patient was in a moribund condition, permanently unconscious, and frequently in convulsions, not a drop of urine having been secreted by the kidneys for more than thirty hours. Sweating, free purging, colon flushings, and other therapeutic resources, including a venesection with the abstraction of over 500 c.c. of blood from the arm, had proved powerless

to control the uræmic crisis or to start the action of the kidneys. At this stage of the case, with the end but a few hours away, I was requested by Professor Caillé to assume again charge of the case and to perform a second decapsulation of the kidneys as a final resort and forlorn hope. In view of the proven potency of renal decapsulation in relieving suppression of urine and increasing the urea output when all other measures had failed, I declared myself ready to operate upon this desperate case. The patient was brought to my private hospital, and within an hour after his arrival the operation was begun.

Second operation, March 31, 1904, under nitrous oxide and ether anæsthesia. Redecapsulation of both kidneys.

The patient was carried to the operating room unconscious, livid, and with beginning œdema of the lungs, the heart's action, however, still being fairly good. A catheter was passed and the bladder was found empty. An incision was carried on the right side through the scar of the first operation and the kidney was exposed. The fatty capsule completely covered the kidney, being adherent posteriorly to the scar of the former operation and anteriorly to the kidney. The kidney was thus indirectly and mediately anchored to the walls of the abdomen in the lumbar region. After detaching the fatty capsule the kidney was found covered by a newly formed capsule proper, not differing greatly in appearance from the capsule removed at the first operation. The new capsule was thinner and perhaps more transparent than the original capsule, which, it will be recalled, was slightly and unevenly thickened. It was peeled off from the entire surface of the kidney and cut away with no greater difficulty than obtained in the case of the original capsule. There was not the slightest evidence of compression of the kidney by the new capsule. The perirenal fat was found well vascularized, though the entire operation, including the separation of the capsule from the kidney, was practically bloodless, owing possibly to the liberal venesection of the previous day. The kidney itself was found of exactly the size and volume encountered at the first operation two years previously. It presented also the same characteristic gross appearance of chronic interstitial nephritis. It was, however, decidedly less hard and more succulent to palpation than at the first operation. The left kidney was next operated upon, the description above given of the operation on the right kidney holding good also for the

operation on the left urinary gland. The left kidney was found in identical condition as regards size and gross appearances with that found at the first operation; it likewise was distinctly more succulent and less fibrous than at the first operation two years before.

On completion of the operation the patient was returned to bed in about the same condition in which he came to the operating table. The uræmia remained uninfluenced, and five hours after operation the patient died in uræmic coma. The flow of urine, however,—and this is a matter of considerable practical interest—was started by the operation, although too late to be of any avail in saving life. During the last three hours of life the patient unconsciously voided into bed considerable quantities of urine, the exact amount of which could not be determined.

Urine examinations were made during the progress of the case to the number of more than thirty. The appended table contains a selection from those made by Prof. H. T. Brooks or Dr. W. G. Vincent. They show little or no practical improvement, the change for the better otherwise to be expected after renal decapsulation being neutralized by the persistent urinary infection.

CASE No. 30.—C. L., male, 26 years of age; weight, 60 kilograms.

Decapsulation of both kidneys: May 1, 1902.

Redecapsulation of both kidneys: March 31, 1904.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin	Renal casts.
Apr. 25, 1902. (before operation.)		1012		1.5%	30% by bulk, Heller.	Large numbers small hyaline, granular, epithelial and mixed casts. Occasional granular and fatty renal element. Large numbers isolated pus cells.
June 23, 1902.		1014		1.7%	30% by bulk, Heller.	Innumerable casts of all kinds except waxy. Occasional granular and dis-integrated renal cell. Occasional isolated blood cell. Innumerable pus cells, isolated and in masses.
Jan. 21, 1904.	2800 c. c.	1011	74.56 grams.	14 grams in 24 hours.	25% by bulk, Heller.	Numerous large hyaline, fine granular, epithelial and mixed; occasional pus cast. Occasional isolated red blood cell. Innumerable isolated pus cells, often in small masses resembling fragments of pus casts. Numerous renal cells, occasionally finely fatty.

Jan. 27, 1904.	3800 c. c.	1007	61.798 grams.	19 grams in 24 hours.	30% by bulk, Heller.	Occasional very large hyaline and pus; also mixed and finely fatty. Innumerable pus cells, often in small masses. Considerable number renal elements, occasionally very gran- ular.
Feb. 5, 1904.	4000 c. c.	1008	74.56 grams.	16 grams in 24 hours.	33% by bulk, Heller.	Rarely a large hyaline and epithelial and pus. Numerous pus cells, isolated and in masses resembling frag- ments of pus casts. Large number of granular renal elements.
Feb. 14, 1904.	2000 c. c.	1010	46.6 grams.	10 grams in 24 hours.	0.8%	Frequent hyaline. Rather frequent coarse granu- lar. Few epithelial. Many isolated red cells. Numerous pus cells, singly and in masses.
Feb. 20, 1904.	1700 c. c.	1012	47.53 grams.	13.6 grams in 24 hours.	heavy ring.	Many hyaline. Occasional granular. Few mucous threads. Many red cells and many pus cells.
March 7, 1904.	1200 c. c.	1012	33.55 grams.	18 grams in 24 hours.	marked ring.	Few hyaline. Rarely a fine granular. Few isolated red cells. Quite frequent pus cells, singly and in small masses.

Three points of interest stand out in the history of the case nar-
rated: (1) The nullification of the usual good effects of renal
decapsulation by persistent chronic infection of the genito-urinary
tract. Notwithstanding this, it remains an interesting speculation
as to what the outcome of renal redencapsulation would have been
if performed two months earlier, when first advised by Dr. Caillé.
(2) The mediate and practically normal fixation of both kidneys
as a result of simply dropping the kidneys back into their fatty
beds after decapsulation. (3) The prompt effect of decapsulation
in relieving complete anuria. Whitacre (*Journal of the American
Medical Association*, 1903, XL., 1409-1416) has already detailed
a case in which suppression of urine of eight days' standing was
cured by renal decapsulation. In my own experience with renal
decapsulation, I have repeatedly observed the prompt conversion
of almost complete suppression of varying duration into free flow
of a normal or greater than normal amount of urine as a result
of operation.

Very little or nothing can at present be said concerning renal
redencapsulation except that it will stand or fall as a therapeutic
measure with renal decapsulation. Any further expression of

opinion must, until the results of further experience are available, rest upon theoretical considerations only.

The main and most frequent indication for renal redecapsulation in chronic Bright's disease will probably remain that already outlined, *i. e.*, when, after a more or less protracted period of improvement following a first decapsulation, the clinical symptoms should return or become aggravated. This indication does not embrace the transient acute exacerbations so frequently observed in the course of chronic Bright's disease, whether the kidneys have or have not been decapsulated. It applies rather to those cases of uræmia and of failure of kidney function characterized by a steady diminution in the amount of the daily output of urea, since the most striking and constant result of renal decapsulation for chronic Bright's disease is the increased elimination of urea. Suppression of urine, representing as it does the extreme degree of renal inactivity, is of course included in the just mentioned indication.

Johnson (*Annals of Surgery*, 1903, XXVII., 592-601) has found that in dogs the capsule proper of the kidney is composed of two layers, the inner and thinner of which cannot, as a rule, be separated from the kidney. I have on one occasion encountered the same condition in an operation upon a man twenty-seven years of age. The outer layer of the capsule proper was removed without any unusual difficulty, leaving a thin, translucent, filmy, inner layer still covering the kidney. All efforts to detach this inner layer from the kidney failed; wherever any portion of it was removed it brought away with it adherent particles of kidney tissue. In just such a case, a redecapsulation, say three or four months after the first operation, *might* succeed in removing the inner layer of the old capsule in one piece or layer with the new capsule.

To relieve imaginary pressure, supposed to be exercised upon a kidney by the new capsule formed after renal decapsulation, cannot be considered as an indication for renal redecapsulation. That the new capsule exercises such pressure has not, as yet, been demonstrated; it certainly did not do so in the case detailed.

Judging from the above solitary experience in the living and from an additional observation in the dead house, the removal of the new capsule presents no greater technical difficulties than the removal of the original renal capsule.

A SECOND CASE OF PUERPERAL ECLAMPSIA SUCCESSFULLY TREATED BY RENAL DECAPSULATION.*

BY GEORGE M. EDEBOHLS, M. D.

(Reprinted from the *Boston Medical and Surgical Journal*, June 2, 1904.)

A year ago I had the honor of presenting for your consideration a report of the first case of renal decapsulation for puerperal eclampsia. The account of this first case, as published in the *New York Medical Journal* of June 6, 1903, may be epitomized as follows: Primipara, aged twenty-three. Typhoid fever during the fourth month of pregnancy. Symptoms of nephritis first noted during the seventh month. Uræmia and eclamptic seizures near the end of eighth month. Five severe convulsions within sixteen hours, followed by forced delivery during fifth convulsion. Freedom from convulsions for forty-six hours after delivery. Then return of convulsions, six severe convulsions, not counting minor manifestations, occurring in eighteen hours. Decapsulation of both kidneys. No further convulsions, and rapid restoration of complete health.

I may add that I have seen the patient within the present month (May, 1904), and that she enjoys perfect health, with urine free from albumin and casts, fifteen months after operation.

In presenting the case I concluded with the following remarks: "The practical deduction from the happy result obtained is that we possess in renal decapsulation an additional potent resource in the treatment of puerperal eclampsia of renal origin. Personally, I should not hesitate to apply it again in a similar instance. I would even go further and propose a trial of renal decapsulation in puerperal convulsions of nephritic origin occurring prior to the beginning of labor. The mother would certainly

*Read before the American Gynæcological Society, Boston, May 24, 1904.

be benefited, and the occurrence of premature delivery or the necessity of inducing it might possibly be averted."

On the first day of the present year, the opportunity presented and was embraced of performing renal decapsulation for puerperal eclampsia upon the undelivered woman. The result is recorded in the following history of the case:

On January 1, 1904, I was asked by Dr. N. R. Dann to aid him in a case of puerperal convulsions. The patient, W. N., a primipara of twenty, was married on February 2, 1903, menstruated last on April 4, 1903, and expected to be confined on January 9, 1904. Pregnancy progressed smoothly until the occurrence of vulvar pruritus in November, 1903. Examination of the urine made by Dr. Dann at the date last named gave normal results, neither albumin nor sugar being present. On December 20, 1903, the patient complained of specks before the eyes and dizziness. The urine was again examined, and found to contain a trace of albumin. On December 28, 1903, œdema of the feet, puffiness of the eyelids, beginning coma, and total blindness supervened. The dropsy increased, the coma deepened, and the patient remained blind until January 1, 1904, on which day, at 10 A. M., the first convulsive twitching occurred. An hour later I saw the patient with Dr. Dann, who had exhausted all the usual resources in attempts to dispel or lessen the uræmia.

The patient's mental condition varied between stupid semi-consciousness and muttering active delirium. She was totally blind, with labored breathing, full, soft pulse, and temperature but slightly above the normal. The abdomen was of unusually large size, even for a nine months' gestation; the dimensions of the patient were suggestive of hydramnios or twins. The lower extremities, the abdominal walls, and the back were dropsical in the extreme, while the upper extremities and face were only slightly œdematous. Fetal movements, though not vigorous, could be plainly felt, and the fetal heart sounds were clear, distinct and regular. The cervix was tightly closed, and there was not the slightest indication of beginning labor. During the twenty-four hours preceding my first visit the patient had voided in all 360 c. c. of urine, containing 0.4 per cent. of urea, making a total output of only 1.44 gm. of urea in twenty-four hours. During our examination a second general twitching occurred.

Renal decapsulation was offered the family and friends of the comatose patient as the most certain, prompt and efficacious measure to increase the urea output and thus to avert impending death from uræmia. The offer was accepted, and hurried preparations were at once made for operation at the home of the patient.

The operation was performed on January 1, 1904, at 11.30 A. M., Dr. Thomas L. Bennett administering chloroform and Drs. W. G. Vincent and S. W. Adams assisting. On account of the enormous size of the abdomen, and of the danger of injuring the fetus by pressure, the lateral decubitus was the only position available. The left kidney was first operated upon, the patient lying on her right side. The extreme dropsy of the back, by increasing the depth of the wounds, and the convulsive twitchings of the patient, even under chloroform, made the work rather more difficult than usual. The left kidney was increased in volume to about 50 per cent. above the normal. The capsule proper was found thick, strong, and loosely gathered or wrapped around the kidney. It was so loose, indeed, as to be slightly corrugated, and it could be pinched up in folds. There was no bleeding, not even oozing, from the kidney surface on stripping off the capsule, although the hemorrhage in cutting through the abdominal parietes had been unusually free. This hemorrhage, by the way, was purposely encouraged, and was only checked when it was judged that a sufficient amount of blood had been lost to confer on the patient the benefits of a moderate venesection. The capsule was separated from the kidney over the entire surface of the latter, and was excised in toto. The kidney surface, after removal of the capsule, presented everywhere a dirty-gray, turbid, sluggish and stagnant appearance, the entire organ being choked with inflammatory exudate.

After completion of operation upon the left kidney the patient was turned upon her left side, the right lumbar region was rendered aseptic, and incision was made down upon the right kidney. The right kidney and its capsule were found in identical condition with that recorded for the left kidney, except that the right kidney was not quite as large as the left. Operation upon the right side was easier than on the left, the right kidney being readily delivered well into the wound, while the left kidney, which could not be so delivered, had proved more difficult of access. The operation upon the left kidney required fifteen, that upon the right

fourteen minutes. Altogether, including the time required for washings and posturings, the patient was under the anæsthetic for forty-five minutes. At the conclusion of operation the patient was returned to bed in good condition. The operative diagnosis was right and left acute or subacute parenchymatous nephritis.

During the twenty-four hours following operation there was almost complete suppression of urine, only 30 c. c. of gelatinous, semi-solid, coffee-colored urine being obtained by catheter. Notwithstanding this, the patient's condition changed visibly for the better. During the same twenty-four hours of suppression following operation, the general restlessness and delirium disappeared, there were no further twitchings or convulsions, sight was restored following four days of total blindness, and the patient was able to recognize those around her. At the end of twenty-four hours after operation the urine began to flow freely, 1,000 c. c. being drawn by catheter, and a great deal more being voided into bed during the second twenty-four hours following operation, while the improvement of the patient's general symptoms became more and more marked, and her condition no longer gave rise to immediate anxiety.

The next event of importance was the spontaneous commencement of labor forty-eight hours after operation. The beginning of cervical dilatation at 10 A. M., on January 3, 1904, was marked by a petty convulsion, quickly controlled by chloroform. At 10.30 A. M. and at 11 A. M., two further slight twitchings, the last in the history of the case, occurred. They were regarded as the response of the nervous system, still very susceptible by reason of uræmic intoxication, to the ushering in of the parturient act. They gave rise to no anxiety, as the patient's condition was otherwise satisfactory. At 1 P. M., the fetal heart sounds having all along remained distinct, and the cervix having spontaneously dilated to a sufficient degree, the forceps were applied to the presenting head, and a male child weighing 2,640 c. c. was delivered. The partly asphyxiated child was revived by assiduous work on the part of Dr. Dann. An examination of the woman now showed a second head presenting. The fetal heart sounds remained clear. After a short period of rest for the mother, and a little time granted for spontaneous birth, it was thought advisable, in the interests of the second child to deliver. The forceps were applied to the head of the second child, and delivery was effected at about 3 P. M. The

second child, of the same sex and weight as the first, was born alive, but breathed only a few times after its birth, all efforts at resuscitation failing. The two placentæ were next delivered, after which the uterus contracted firmly and satisfactorily. The dressings of the lumbar wounds, which had become disarranged during labor, and as a consequence of the immense shrinkage in size of the abdomen, were changed, and the patient was allowed a much needed rest. She slept a natural sleep for the greater part of the twenty-four hours after delivery, and awoke a changed, bright woman, in full possession of all her faculties.

The further progress of the case was uneventful. There was no recurrence of twitchings or of any unfavorable symptoms, and the remaining œdema rapidly disappeared. During the four or five days immediately following delivery a perfect deluge of urine, loaded with casts of all kinds, and containing albumin in quantities varying between 0.05 and 0.6 per cent., came down from the kidneys. The urine, mixed with blood and the lochial discharges, was not in favorable condition for satisfactory examination. Much of the urine also was lost with the fecal discharges, which were abundant and frequent for some days. The exact daily amount of urine, therefore, could not be determined with anything like precision. Three days after operation, from January 5 to 6, the amount of urine voided in twenty-four hours, as estimated by the nurse, was not less than 6,800 c. c. One uncontaminated specimen of no less than 1,680 c. c., obtained at a single catheterization on January 6, was submitted to careful analysis, with the following result: Specific gravity, 1.016; total solids in this one voiding, 62.63 gm.; urea, 1.3 per cent.; total urea in one voiding, 21.84 gm.; albumin, 0.6 per cent.; numerous hyaline, epitheliated, fine and coarse granular casts, many of the latter with fat droplets; a few waxy, epithelial, blood and mixed casts; numerous isolated red blood cells; moderately frequent leucocytes. Numerous renal cells.

The output of solids and of urea during the first days after operation was simply enormous. Presuming that the specific gravity and the urea per cent. above noted for a single voiding apply to the entire quantity estimated to have been passed during the third day after operation, we have an output for the third twenty-four hours after operation of no less than 253.5 gm. of solids and of 88.4 gm. of urea. By the end of a week after opera-

tion the daily excretion of solids and urea had gradually returned to about the normal. Owing to the presence of the lochial discharges, and to unwillingness to draw all of the urine by catheter, a full and valid twenty-four-hour specimen of urine was not obtained for examination until January 14. Prior examinations of single voidings obtained by catheter showed a steady diminution from day to day of the amount of albumin and of the number and variety of casts. Examination of a full twenty-four-hour specimen, made January 14, 1904, gave the following result: Total quantity of urine, 5,000 c. c.; specific gravity, 1.011; total solids, 128.15 gm.; urea, 0.3 per cent.; total urea, 15 gm.; albumin, a marked trace; sugar, none; casts, occasional hyaline and granular, rarely a waxy; red and white cells, due to contamination with lochia.

On January 31, 1904, the total amount of urine was 1,700 c. c.; specific gravity, 1.015; total solids, 59.42 gm.; total urea, 11.9 gm.; albumin, a faint trace; rarely a hyaline cast; a few mucous cylindroids; no renal elements; still some lochial cells. An examination, made April 9, 1904, showed the urine to be practically normal; no albumin, no casts, a few mucous cylindroids, no renal elements.

The progress of improvement in the patient's general condition kept pace with that of the urine. At no time after delivery was there any cause for anxiety. The puerperium ran a normal course. Both lumbar incisions healed by primary union throughout, in spite of much unavoidable disturbance of the dressings during labor and immediately afterward. Three weeks after operation the patient left her bed, and a week later resumed her duties in life.

Last report, May 14, 1904, four and a half months after operation. Patient has nursed her child continuously from its birth to date of report. Mother and child are enjoying most excellent health; the child weighs 9.5 kg. Examination of the mother's urine gives the following results: Total quantity voided in twenty-four hours, 1,950 c. c.; specific gravity, 1.012; total solids, 54.52 gm.; total urea, 21.45 gm.; no albumin; an occasional hyaline cast.

The case just narrated speaks for itself. Further comment appears unnecessary, and further valid deductions cannot be drawn from a single case. One fact stands forth prominently as abso-

lutely proven and firmly established by the case, namely, that renal decapsulation can arrest the progress of uræmia and of puerperal convulsions of renal origin *in the undelivered woman*. The deduction is self-evident. The production of abortion, and the induction of premature labor, with all that those procedures imply for mother and child, need not henceforth be our only ultimate resources in the treatment of puerperal eclampsia.

THE HISTORIES OF SEVENTY-TWO PATIENTS OPER-
ATED UPON BY THE AUTHOR FOR CHRONIC
BRIGHT'S DISEASE UP TO THE END
OF THE YEAR 1903.

INTRODUCTORY REMARKS.

In the pages to follow are recorded the histories in full of seventy-two patients upon whose kidneys I have operated with the hope of curing or improving existing chronic Bright's disease. The list embraces all cases operated upon up to the end of the year 1903. Cases operated upon during the current year of 1904 have not been included, as sufficient time is not deemed to have elapsed since operation to render a study of the results obtained of any decided value. Nine months represents the shortest period of observation after operation in any of the surviving cases here recorded.

The value of this record of observations, however, depends even less upon the length of the period of observation after operation in each case, than upon the completeness of the entire record as such. All but three of the seventy-two cases are fully accounted for either to the day of death or to date of going to press. The three cases unaccounted for were lost sight of before my first publication in 1899, when my interest in the entire subject of the surgical treatment of Bright's disease first became fully aroused. In spite of strenuous and persistent efforts made during the past five years, I have been unable to obtain any clue to the ultimate fate or the present whereabouts of these three patients.

The amount of labor and the sustained effort involved in thus keeping track of sixty-nine patients for periods of time varying between nine months and twelve years after operation, can only be fully understood and appreciated by one who has ever attempted a similar task. The task, in the present instance, was rendered more difficult than usual by the wide geographical distri-

bution of my patients over practically every section of our country. To keep in touch with these widely scattered patients required an unlimited amount of persistent and insistent correspondence. Particularly difficult did it prove to obtain accurate data concerning dates and causes of ulterior deaths.

The vast majority of my cases, including the bulk of those operated upon in hospitals, were private patients; scarcely half a dozen belonged to the class of hospital ward patients. This fact has been of material assistance in enabling me to keep in touch with my patients after they had left my care and departed for their homes. The hospital ward cases are all but invariably lost to observation after leaving hospital.

The fact that they have been operated upon for chronic Bright's disease has, in one way or another, become rather widely known in the case of most of my patients. This fact has proved a source of some embarrassment when I approached the task of preparing for publication the histories of their illness prior to coming under my care. There are details, now and then, in the history of a patient, which the latter naturally does not care to have others than his professional adviser know. All statements, therefore, relative to venereal infections, alcoholic excesses, drug addictions and the like have been carefully expurgated from the histories here published. This, of course, detracts from the full interest of the histories from a professional point of view, by stamping the cases of a milder type than that which they in reality presented.

As an earnest of good faith, the name and address of the patient's medical adviser has been appended to the history of each case referred to me by a physician. In the ten instances in which physicians themselves were the patients, I have refrained from giving names simply to shield busy men from the burden of time-consuming and fatiguing correspondence. Too frequently I have found that patients, entertaining the idea of operation, have not hesitated to write to such as they had learned had undergone operation. As a matter of course, they expected answers at length to the many questions their natural anxiety prompted them to ask. As far as lay in my power, I have always shielded my patients, especially my busy professional brethren, from such importunities.

The vast majority—I might almost say all—of my patients have proven themselves to be of the grateful variety, and have

freely and voluntarily co-operated with me in the attempt to solve the question of the curability of chronic Bright's disease. Aside from the natural desire to learn how their own cases were progressing, they have felt that only by frequent reports and by sending me specimens of urine for analysis could the real value of the new method of treatment be determined. Very frequently these reports and specimens of urine have been sent by patients at stated periods without a special request. Whenever I failed to hear from a patient for a period of six months, I have made it my duty to inquire by letter directed either to the patient or to the attending physician, as to the condition of the patient. The response invariably came, although sometimes only after repeated inquiries. From two or three patients a written report was all that could be obtained as the result of mailed inquiries, and I was compelled to send a personal emissary to obtain the desired and necessary specimen of urine.

When the time to prepare the histories of the cases for publication finally arrived, I wrote out the data, as far as I was able to do so, from the records in my possession. These data were sent to each patient for verification, correction and amplification, if need be, in the matter of family history, of history prior to operation, and of history since operation. These corrections and amplifications are incorporated in the histories here presented, and the records are believed to be as correct in all essentials as it is possible to make them.

The great, I might almost say the only, real difficulty in these investigations consisted in obtaining for examination a twenty-four-hour specimen of urine—*i. e.*, a specimen taken from the total quantity of urine voided during the twenty-four hours of a day. It is but little trouble for a patient to mail or send a specimen of urine from a single voiding; to collect all the urine passed in twenty-four hours has in some instances, in which the patient's business necessitated absence from home during a part or the whole of a day, proven the real difficulty. I consider myself exceptionally fortunate, therefore, in being able to present, in connection with the history of the case, a recent analysis of a twenty-four-hour specimen of urine of every surviving patient. A uranalysis of a twenty-four-hour specimen is absolutely essential to judge of a patient's true condition, and real progress or otherwise, as far as the health of the kidney is concerned.

The following printed directions were sent to each patient with each request for a specimen of urine :

Directions for Collecting and Sending a Specimen of Urine.

The best way to obtain a satisfactory specimen for examination is as follows :

Collect all the urine voided during twenty-four hours, say from midnight to midnight, or between any hour of one day and the same hour of the next day, in a perfectly clean vessel large enough to hold it all.

Keep the vessel in as cool a place as practicable to avoid, as far as possible, decomposition of the urine. Dropping from five to ten drops of chloroform into the urine already collected each time a new voiding is added will insure prime preservation.

To avoid loss of urine with movement of the bowels, always void urine before going to stool.

At the end of the twenty-four hours thoroughly mix the urine by shaking or stirring.

Thoroughly cleanse a four-ounce bottle and, if possible, scald or boil both bottle and cork.

Nearly fill the four-ounce bottle with a sample of the well-mixed urine, add thirty to forty drops of chloroform for preservation, and cork tightly.

Measure and record the total amount of urine voided in the twenty-four hours.

Give measurement in ounces ; the four-ounce bottle may prove of service in measuring, if nothing more convenient be at hand.

Attach a label stating name, address, and total amount of urine passed in twenty-four hours. Send bottle containing sample by messenger, mail, or express, to

Dr. G. M. Edebohls, 59 West 49th Street, New York.

When sending by mail, always use a mailing case to prevent breaking of bottle.

Advise me by mail that specimen has been sent.

In the preparation of the uranalysis table accompanying the histories of my cases, unimportant and more or less irrelevant details have been purposely omitted. The introduction of such details would have led to too great prolixity, would have invited

confusion, and would have tended to draw the attention away from the essentials. These essentials, which have been given wherever it was possible to do so, are:

1. The total quantity of urine voided in twenty-four hours.
2. The specific gravity.
3. The total amount of solids excreted by the kidneys in twenty-four hours.
4. The total amount of urea excreted in twenty-four hours.
5. The presence or absence of albumin.
6. The findings on microscopical examination: casts, renal elements, blood, leucocytes, etc.

In the pages to follow will be found detailed in full the history of every patient operated upon by me for chronic Bright's disease up to the end of the year 1903. It was my original purpose to present these cases in the form of a table. Such a table, it was found, would have exceeded all reasonable limits of length. An effort has been made, however, to preserve the advantages of the tabular form by arranging the history of each case under certain definite headings common to all the cases. The headings selected are as follows:

1. Initials, sex and age of patient. Name and address of attending physician.
2. Family history.
3. History of patient prior to operation.
4. Condition of patient prior to operation, as shown by physical examination.
5. Duration of chronic Bright's disease prior to operation:
 - (a) As indicated by symptoms.
 - (b) As known from examination of the urine.
6. Date and place of operation.
7. Nature of operation performed.
8. Anæsthetic employed.
9. Condition of kidneys as ascertained at operation.
10. Diagnosis of variety of nephritis.
11. Character of convalescence.
12. History of patient after operation.
13. Urine examinations, tabulated according to the plan outlined above, giving weight of patient when known.
14. Result of operation, with comments.

Case No. 1.

A. B., female, 18 years of age, single.

Family history.—Father living. Mother died of a complication of lung, heart and kidney diseases.

History prior to operation.—Patient first came under my care, June 22, 1891, suffering from various diseased conditions of the pelvic organs calling for operation. Pallor and puffiness of the face, slight œdema of the extremities, and moderate cardiac hypertrophy, led to examination of the urine, which revealed the presence of albumin, hyaline, granular and epitheliated casts, with lowered specific gravity and urea per cent. In the presence of chronic Bright's disease, operation of any kind was declined, and the patient was discharged. In September, 1891, the pain and distress due to the pelvic disorder having become intolerable, the patient was readmitted to hospital, and, under ether, an operation on the uterus was performed. Further operations on the pelvic organs were performed on December 22, 1891, and on June 28, 1892, each time again under ether. Chronic nephritis was present at the time of each of these operations, and accompanied by symptoms due to movable right kidney, which developed during the latter half of 1892, persisted until the date of operation on the kidney.

Examination prior to operation gave the same results, both as regards the patient's general condition and the urine, as found on June 22, 1891. Right kidney movable twelve centimeters, a little tender to pressure; left kidney not palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As determined by examination of the urine, one year and five months.

Operation.—November 29, 1892, at St. Francis Hospital.

Partial decapsulation and fixation of right kidney.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney a trifle small and hard; its surface, after removal of capsule, slightly granular. Left kidney not operated upon but, from subsequent progress of case, judged to be practically normal.

Diagnosis.—Right chronic interstitial nephritis.

Convalescence uneventful; primary healing of wound.

History since operation.—Gradual disappearance of all former symptoms and full recovery of health in about two years after operation, during which time mobility of the left kidney, not producing symptoms, developed. From 1894 until the present day patient has enjoyed uninterrupted good health, the right kidney remaining securely anchored, while the left continues movable. Married in January, 1904. Last report received May 27, 1904, on which date the patient felt and looked perfectly well.

Urine examinations were made to the number of more than a dozen. The complete records of the earlier examinations were lost, and only those of the last four years remain in my possession. Albumin and casts disappeared permanently from the urine two months after operation, and all examinations made subsequent to that date, with one exception, show perfectly normal urine. The exception was in May, 1902, when the kidneys were temporarily deranged during an attack of grippe. Last urine examination, May 27, 1904, gives: Total quantity voided in twenty-four hours, 1,000 c. c.; specific gravity, 1.022; total solids in twenty-four hours, 51.26 grams; total urea in twenty-four hours, 26.0 grams; no albumin; rarely a hyaline cast.

Result.—An ideal cure of right chronic interstitial nephritis, persisting eleven and one-half years after operation.

Case No. 2.

G. H., female, 39 years of age, widow.

Family history.—Father died of chronic Bright's disease. One brother died of phthisis.

History prior to operation.—Symptoms of irritation of bladder for past seven years. For past year dyspeptic manifestations, pains and aches of various kinds and cardiac palpitation. Occasionally anuria of from twelve to twenty-four hours' duration.

Examination.—Bladder slightly sensitive to bimanual palpation; contains no foreign body. Right kidney movable twelve to thirteen centimeters; left kidney movable ten centimeters. Urine contains a large amount of albumin, many hyaline and granular and a few epithelial casts. Bilateral nephropexy advised to relieve the urgent symptoms due to mobility of the kidneys, the effects upon the nephritis being hazarded in view of the necessities of the situation.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year.
- b) As known from urine examination, one week.

Operation.—March 10, 1893, at St. Francis Hospital.

Partial decapsulation and fixation of both kidneys.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Both kidneys small, hard, with uneven surfaces, due to connective tissue contractions of varying degree in different parts of both organs.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence very stormy. Patient became demented and violent immediately after operation, and remained thus for two weeks. During this time she repeatedly tore off all dressings from both wounds, tore open the wounds themselves with her hands, and proved generally so unmanageable that her life was despaired of. Sanity was restored after two weeks, and from that time on she was a model, tractable patient. The wounds, however, had been infected by the patient during her period of violence, and healing was by granulation.

History since operation.—Patient was discharged from hospital six weeks after operation, with urine in practically the same condition as before operation. I heard nothing further from or about her until a year and a half after operation, when I learned that she was an inmate of a Brooklyn hospital. Since then every trace of her has been lost.

Urine examinations.—The urine, before operation, contained a large amount of albumin, many hyaline and granular, and a few epithelial casts. When she left hospital, six weeks after operation, uranalysis gave practically the same findings.

Result.—Unknown. On discharge, six weeks after operation, slight improvement in general health, but no change in urine. Patient lost sight of after leaving hospital.

Case No. 3.

(Compare page 71.)

M. M., female, 28 years of age, married. Patient of Dr. R. G. Wiener, 1,046 Fifth Avenue, New York.

Family history not obtained.

History prior to operation.—Chronic Bright's disease, to Dr. Wiener's personal knowledge, of several years' standing before operation. In addition, mobility of the right kidney, from which the patient suffered to such an extent that Dr. W. requested me to anchor the kidney, hazarding whatever influence the operation might have upon the coexisting nephritis.

Examination.—Thin, cachectic, bedridden patient. Heart sounds normal. Right kidney movable ten to twelve centimeters.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, five years.
- b) As known from urine examinations, three years.

Operation.—May 11, 1893, at home of patient.

Partial decapsulation and fixation of right kidney.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney a trifle large, of lardaceous feel, with mixed dark red and yellow mottling of surface, after removal of capsule. A cyst, some five centimeters in diameter, occupied the middle portion of kidney. Cyst wall incised, contents evacuated, and wound of kidney sutured. Several smaller cysts left undisturbed.

Diagnosis.—Right chronic diffuse nephritis. Left kidney not operated upon, but probably also diseased.

Convalescence uneventful. Primary union of wound.

History since operation.—I did not see the patient again after operation, but learned from Dr. Wiener that the left kidney was removed by another surgeon about three years after my operation upon the right kidney. For five years more the patient lived with only one kidney, the one originally operated upon by the writer. At the end of that time a third surgeon performed an abdominal hysterectomy, as a result of which she died, in May, 1901, eight years after my operation upon her right kidney. According to Dr. W., the nephritis still persisted at the time of her death, although apparently it was not sufficiently grave to contraindicate the serious operation

of removal of the uterus from which she died.

Urine examinations.—None in my possession.

Result.—Death from abdominal hysterectomy, eight years after decapsulation and fixation of right kidney, the nephritis persisting to date of death.

Case No. 4.

L. G., female, 25 years of age, single, patient of Dr. B. R. Morrow, 207 Second Avenue, New York.

Family history.—Father, mother, five brothers and one sister all alive and well.

History prior to operation.—During childhood had measles, whooping cough, and, at the age of four years, scarlatina, followed by dropsy. For years patient has suffered much from sick headache, cardiac palpitation, pains in various parts of abdomen, nervousness and dyspepsia, and during the past seven years has lost 11.5 kilograms in weight.

Examination.—Complexion flabby and doughy; feet slightly œdematous. Marked accentuation of all heart sounds. Right kidney prolapsed twelve centimeters, normal in size, not sensitive. Left kidney prolapsed eight centimeters, about normal in size, and very sensitive to pressure. Several examinations of the urine made during the two weeks preceding operation always gave albumin, with abundant granular, hyaline and epitheliated casts.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, about one year.
- b) As verified by examination of urine, two weeks.

Operation.—January 11, 1896, at St. Francis Hospital.

Partial decapsulation and fixation of both kidneys.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Left kidney about normal in size, very hard and fibrous to touch. Distinct granular appearance of kidney surface after stripping off capsule. Right kidney normal.

Diagnosis.—Left chronic interstitial nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—Immediately following operation, marked improvement of symptoms, with a gain in weight of 13.5 kilograms during the first year. Subsequently suffered

much from malaria, chronic appendicitis, and inflammation of the tubes and ovaries. To cure the two latter conditions I operated, on May 31, 1898, and on December 12, 1899, the patient each time taking ether. Since the last operation patient has been perfectly well in every way, and when last seen, May 18, 1904, she presented a picture of perfect health, and, with the exception of an occasional headache, had not a single symptom to complain of. Both kidneys remain securely anchored. Present weight, 55 kilograms.

Urine Examinations.—At least twenty such were made, the earlier ones of which were lost. Records of six examinations made during the past four years remain in my possession. Albumin and all casts, except a few hyaline, disappeared from the urine in four months after operation, and, with one exception, have remained absent ever since. This exception marked a transient renal irritation in 1902, passing away in one or two weeks. Last urine examination, made May 18, 1904, gives practically normal results: No albumin, rarely a hyaline cast, and a normal daily output of urea and solids.

Result.—An ideal cure of left chronic interstitial nephritis, attained four months after operation, and maintained to the present day, eight years and four months after operation.

Case No. 5.

(Compare page 80.)

M. F., female, 42 years of age, married. Patient of Dr. P. J. Lynch, 216 East 13th Street, New York.

Family history.—Father killed in Civil War at age of 33. Mother in excellent health at 68. Only brother died of tuberculosis at age of 33.

History prior to operation.—All through menstrual life patient suffered much from disorders of menstruation and from pelvi-peritonitis and its consequences. For six years past has been under constant treatment for chronic Bright's disease, dieting very scrupulously and taking much medicine, the nephritis, nevertheless, making constant headway. For one year past has suffered, in addition, from typical symptoms of movable right kidney.

Examination.—Pallor and puffiness of face. Slight œdema of ankles. Uræmic symptoms. Heart slightly hypertrophied;

high tension pulse. Right kidney movable ten centimeters. Left kidney in place. For condition of urine see chart of urine examinations, March 27, 1897.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, eight years.
- b) As verified by examination of urine, six years.

Operation.—April 1, 1897, at home of patient.

Partial decapsulation and fixation of right kidney.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney contracted to about three-fourths the normal size, very hard and fibrous to touch, with slight cystic degeneration and typical granular appearance of surface after removal of capsule. Left kidney not operated upon, but, judged from subsequent progress of case, it may be assumed to have been normal, or nearly so, at the time of operation upon the right kidney.

Diagnosis.—Right chronic interstitial nephritis.

Convalescence uneventful. Primary union of wound.

History since operation.—Patient's health improved rapidly after operation. The symptoms due to movable right kidney soon disappeared, and the patient, a lady in good circumstances, no longer considered herself an invalid. The nephritis, however, did not yield for nearly a year. During this year, as well as prior to operation, Prof. H. T. Brooks made no less than 21 examinations of the urine, and finally pronounced it practically normal. So it remained for about four years, until in February, 1902, nephritis was again found to be present from uranalysis, as well as from the appearance of mild symptoms. The new nephritis, or exacerbation of the old nephritis, persisted for a year, and in my paper of March 28, 1903, I reported the case as one of relapse after apparent cure. During 1903 and the early months of 1904, the urine examinations again showed decided improvement, and the general health was correspondingly good. Latterly, however, there is again a distinct deterioration in the quality of the urine. The daily output of urea is below the normal, and mild symptoms of uræmia are becoming manifest. Patient last seen, and urine last examined, May 21, 1904. The right kidney remains securely anchored.

Urine examinations.—Total number made, twenty-one.

CASE No. 5.—M. F., female, 42 years of age; weight, 59 kilograms.

Operation: April 1, 1897.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Mar. 27, 1897. (before operation.)		1015		1.4%	0.025%	Many large and small hyaline and finely granular. Occasional epithelial.
April 3, 1897.		1025			large trace	Numerous hyaline, coarsely granular, and epithelial. Occasional fatty epithelial.
April 8, 1897.		1023			0.02%	Small number hyaline and granular. Occasional epithelial.
June 4, 1897.		1010			scarcely visible trace.	Occasional hyaline and finely granular of small diameter. Rarely an epithelial.
Oct. 19, 1897.		1020		1.7%	heavy reaction.	Occasional hyaline and granular.
May 22, 1901.		1007			faint trace.	None.
Mar. 25, 1902.		1012		1.3%	strong reaction. 10% by bulk.	Numerous very small hyaline and fine granular. Occasional fine fatty.
Feb. 18, 1903.	1200 c. c.	1016	47.7 grams.	15.0 grams in 24 hours.	distinct trace.	Moderately frequent hyaline.
Jan. 10, 1904.	1620 c. c.	1014	52.84 grams.	16.2 grams in 24 hours.	trace.	Rarely a hyaline.
May 21, 1904.	1500 c. c.	1016	55.92 grams.	10.5 grams in 24 hours.	very faint trace.	Rather frequent hyaline. Rarely an epithelial hyaline. Occasional red cell. A few leucocytes.

Result.—Very decided improvement; general health at all times since operation better than before. A very satisfactory result, all things considered; *i. e.*, operation on one kidney only, doubtful health of the other kidney, an intercurrent severe exacerbation of the old nephritis, or a new nephritis, in the kidney operated upon, in the other kidney, or in both. Patient will not submit to ureteral catheterization to determine this point, being abundantly satisfied, until very recently, with the condition of her health. Urine and general health, at present, more than seven years after operation, both better than before operation.

Case No. 6.

(Compare page 2.)

S. O., female, aged 20 years, single. Patient of Dr. A. Strong, 267 West 52d Street, New York.

Family history.—Father died at 36, from a complication of disorders, including nephritis. Mother living, a sufferer from diabetes. Only brother in good health.

History prior to operation.—Chronic dyspepsia, nervousness, cardialgia for six years past. Marked anæmia, with puffiness of face, pallid complexion, and slight swelling of feet for a year past.

Examination.—January 3, 1898. Marked pallor and puffiness of face, slight swelling of ankles. Heart sounds strong; no murmur. Decided arterial tension. Right kidney movable fifteen, and left kidney ten centimeters. For results of urine examination, which demonstrated the existence of chronic Bright's disease, see chart. Operation on both kidneys advised, both to relieve the symptoms due to mobility of the kidneys, and for the purpose of favorably influencing the nephritis. This case represents the first patient ever operated upon for the express and deliberate purpose of curing chronic Bright's disease, diagnosticated as such before operation, and for that reason possesses historical interest.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year.
- b) As known from examination of urine, one week.

Operation.—January 10, 1898, at home of patient.

Partial decapsulation and fixation of both kidneys.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Left kidney slightly large, irregular in shape, indurated, with marked increase of connective tissue, and very adherent capsule proper. Right kidney normal.

Diagnosis.—Left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Albumin and casts disappeared from the urine in a little over a month, and remained absent for nearly a year and a half, when a transient kidney irritation (see urine examination, June 5, 1899) occurred in connection

with an attack of appendicitis, for which I operated on June 8, 1899. Soon after, the urine again became normal, and with the exception of an occasional minimal disturbance, has so remained to date. Patient resumed her place in life soon after operation, and with the exception of the appendicitis incident has enjoyed the most perfect health during the past six and a half years. She married on August 20, 1902, and gave birth at term to twins, two fine boys, on July 6, 1903. Neither during pregnancy nor at any time subsequent to delivery was there any evidence of disturbed health of the kidneys, a rather noteworthy fact. Patient nursed both children until November, 1903, and presented herself at my office the picture of perfect health, and in the full bloom of young motherhood, on January 2, 1904. Both kidneys remain securely anchored. Last report, June 3, 1904, states that good health continues uninterrupted.

Urine examinations were made in great number. I have preserved records of only fourteen, however, from which the following are selections:

CASE No. 6.—S. O., female, 20 years of age; weight, 55 kilograms.

Operation: January 10, 1898.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Jan. 4, 1898. (before operation.)		1018			faint trace.	Considerable number of hyaline, coarsely granular, epithelial and pus. Blood, a few cells. Innumerable pus cells, often in masses. Occasional renal epithelium.
Jan. 6, 1898. (before operation.)		1023		2.5%	faint trace.	<i>Catheter Specimen.</i> —Small number large and small hyaline, fine and coarsely granular; occasional epitheliated. Small number of pus cells. Occasional renal element.
Jan. 15, 1898.		1018		2.2%	heavy reaction, one-sixth by bulk.	Considerable number large and small hyaline, granular, epitheliated, epithelial and mixed; occasional blood and pus casts. Many blood and pus cells and renal elements.
Jan. 20, 1898.		1014		1.6%	trace.	<i>Catheter Specimen.</i> —Very small number small and large hyaline and granular. Occasional epitheliated. Rarely a blood and pus cell. Rarely a renal element.

Jan. 31, 1898.		1020		2.33%	minute tracc.	<i>Catheter Specimen.</i> —Small number hyaline, granular, epi- theliated and mixed (pus, blood and epithelium). Rarely an epithelial. Occasional blood and pus cell. Rarely a renal element.
June 5, 1899.		1020		1.7%	minute trace, Esbach. Negative, heat and Heller.	Rarely a fine hyaline and faintly granular. Occasional single blood and pus cell. "Aside from leucocytes and red corpuscles, practically nor- mal."—Prof. H. T. Brooks.
April 15, 1901.	very free diuresis.	1007		0.3%	none.	No casts; no blood; no pus. "I can find nothing wrong here."—Prof. H. T. Brooks.
Oct. 24, 1901.		1015		1.6%	nonc.	Occasional large hyaline, rare- ly an epitheliated. "Practically normal. Irrita- tion hyperæmia?"—Prof. H. T. Brooks.
May 20, 1902.		1010		1.2%	nonc.	No casts; no blood; no pus. "Aside from low urea content I can find nothing wrong here." —Prof. H. T. Brooks.
Jan. 21, 1903.	2100 c. c.	1014	71.85 grams.	23.1 grams in 24 hours.	very faint tracc.	<i>Patient three and a half months pregnant.</i> Rarely a hyaline cast.
Jan. 3, 1904.	1200 c. c.	1016	44.736 grams.	17.4 grams in 24 hours.	none.	None.
June 4, 1904.	1080 c. c.	1016	40.26 grams.	16.2 grams in 24 hours.	nonc.	Rarely a hyaline.

Result.—An ideal cure of left chronic interstitial nephritis, with patient in perfect health, and urine normal, six years and five months after operation.

Case No. 7.

F. B., female, 30 years of age, married. Patient of Dr. J. M. F. Egan, 46 West 120th Street, New York.

Family history.—A sister died of Bright's disease at the age of 41.

History prior to operation.—Patient first consulted me, May 7, 1894, during her second pregnancy, for severe and obstinate vomiting. This had also been a troublesome feature of her first pregnancy, which terminated with the birth of twins at term. I next saw the patient more than two years later, in June, 1896, when I found her suffering from symptoms due to a movable right kidney, to correct which condition I advised

nephropexy. The advice was declined, and varied treatment, both medical and surgical, was undergone by the patient for two and a half years more. She consulted me a ~~third~~ time, on November 15, 1898, with a note from her physician, Dr. J. M. F. Egan, stating that she had chronic Bright's disease. This diagnosis was confirmed by Prof. H. T. Brooks after microscopical examination of the urine, which contained albumin and casts of various kinds in great abundance.

Examination.—Patient pale, anæmic, and slightly puffy about face and ankles. Heart sounds normal. High-tension pulse. Both kidneys prolapsed, right ten centimeters and left eight centimeters. Chronic appendicitis.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, about one year.
- b) As verified by examination of urine, three months.

Operation.—January 14, 1899, at home of patient.

Partial decapsulation and fixation of both kidneys. Removal of appendix through right lumbar incision.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Both kidneys a trifle under size, hard, and mottled on surface.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—With minor interruptions, due mainly to slight disorders of the pelvic organs and gouty tendencies, the patient has progressed steadily toward good health. The dyspeptic symptoms proved obstinate for nearly two years. The urine became practically normal about five months after operation. Patient presented herself at my office on January 11, 1904, five years after operation, the picture of health. All her numerous old symptoms had long ago vanished. Latest report, received May 20, 1904, affirms the continuation of good health.

Urine examinations.—The records of examinations made before and immediately following operation have all been lost. All examinations made within the three months preceding operation showed chronic Bright's disease. Albumin and casts of various kinds were constantly present and the excretion of urea was chronically deficient. I subjoin the records of seven later examinations still in my possession.

CASE No. 7.—F. B., female, 30 years of age; weight, 48 kilograms.

Operation: January 14, 1899.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
June 12, 1899.		1016		1.5%	minute trace.	Occasional large and small hyaline and finely granular; rarely an epitheliated.
April 19, 1901.		1020		1.9%	faint trace.	Occasional small hyaline and fine granular; rarely an epitheliated. "Very little evidence of renal lesion."—Prof. Brooks.
Oct. 26, 1901.		1021		2.6%	distinct trace.	Rarely a small hyaline and fine granular. Rarely an isolated blood cell and leucocyte. "Very little evidence of renal trouble."—Prof. Brooks.
May 27, 1902.		1025		2.8%	minute trace.	Occasional small hyaline and fine granular. "Gouty?"—Prof. Brooks.
June 22, 1903.	630 c. c.	1026	38.17 grams.	16.38 grams in 24 hours.	none.	Two small hyaline found after long search over two slides.
Jan. 3, 1904.	750 c. c.	1026	45.44 grams.	21.0 grams in 24 hours.	none.	None.
May 20, 1904.	690 c. c.	1018	28.94 grams.	14.49 grams in 24 hours.	none.	None.

Result.—An ideal cure of right and left chronic interstitial nephritis, the patient's general health and the work of the kidneys improving steadily year after year, until now, five years and four months after operation, there appears to be no room for further improvement.

Case No. 8.

A. Van W., female, 45 years of age, married. Patient of Dr. B. R. Morrow, 207 Second Avenue, New York.

Family history.—Father died at 72, with stone in bladder. Mother died at 55, of chronic Bright's disease. One sister, aged 48, suffers from gall-stones; a second sister, aged 46, suffers from chronic Bright's disease.

History prior to operation.—Patient came to me on November 23, 1898, a complete physical and nervous wreck, her vitality sapped by pelvic disorders of long standing, by the

symptoms produced by mobility of both kidneys, and by an inveterate gouty diathesis.

Examination.—Pallor and extreme emaciation and feebleness. No œdema. Heart normal. Slight arteriosclerosis. Right kidney movable fifteen centimeters; left kidney movable ten centimeters and sensitive to pressure. Examination of the urine, made a number of times before operation, always gave evidences of chronic nephritis. Albumin, together with hyaline, granular and epitheliated casts in considerable number were constantly present, and the urea output remained steadily below par. Chronic appendicitis.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, about one year.
- b) As verified by examination of urine, three months.

Operation.—March 6, 1899, at Post Graduate Hospital.

Partial decapsulation and fixation of both kidneys. Removal of appendix through right lumbar incision.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Left kidney hard, slightly large, irregular in form, and mottled on surface after removal of capsule. Right kidney normal.

Diagnosis.—Left chronic interstitial nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—It took the patient a full year, and the aid of further operation for the cure of the pelvic disorders, to recover from the profound physical and psychical depression preceding operation. After that her progress toward health was steady and sure, except when interrupted by gout. When last seen, early in January, 1904, she had just gotten over a severe influenza and was not feeling quite up to her usual mark of the past two years. Last advices, June 28, 1904, state that her health is again good, with the exception of attacks of nervousness.

Urine examinations.—Of some fifteen examinations made, but six remain in my possession, the earlier ones having all been lost. The urine became practically normal four months after operation, and with one brief period of interruption, has so remained ever since. Two or three attacks of kidney irritation occurred during 1901 and 1902, but for a year past the urine has been normal.

CASE No. 8.—A. v. W., female, 45 years of age; weight, 49 kilograms.

Operation: March 6, 1899.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
April 17, 1901.		1018		1.7%	none.	None. "I can find nothing wrong here."—Prof. Brooks.
Oct. 25, 1901.		1009		1.3%	none.	Numerous small hyaline and fine granular; occasional mixed (leucocytes, red cells and epithelia). Rarely a granular epithelium. Large numbers of uric acid crystals. "Gouty irritation from crystals (?)"—Prof. Brooks.
May 19, 1902.		1016		1.8%	none.	Rarely a small hyaline, fine granular and epitheliated. "Mild interstitial (?)"—Prof. Brooks.
Jan. 20, 1903.	2520 c. c.	1011	64.36 grams.	35.28 grams in 24 hours.	none.	None.
Dec. 23, 1903.	2580 e. c.	1009	54.1 grams.	25.8 grams in 24 hours.	none.	Very rarely a hyaline.
April 1, 1904.	2220 c. e.	1015	77.59 grams.	35.52 grams in 24 hours.	none.	None.
June 28, 1904.	2100 c. c.	1018	88.07 grams.	44.1 grams in 24 hours.	none.	Very rarely a hyaline.

Result.—An ideal cure of a left chronic interstitial nephritis, holding good four years and three months after operation, in spite of several exacerbations or slight new attacks, generally and in greater part due to gout. Patient writes that her health is "immeasurably better" than before operation.

Case No. 9.

C. G., female, 30 years of age, married.

Family history not pertinent.

History prior to operation.—Peritonitis followed the birth of first child, five years ago. Various disorders of the pelvic organs followed, and chronic nephritis developed. The symptoms, due to the diseased pelvic viscera, became so urgent that operation for their relief was undertaken by a colleague at the

Post Graduate Hospital on December 21, 1898. At this operation chloroform was used as an anæsthetic in place of the customary ether, on account of the presence of advanced chronic nephritis. Relief from the pelvic symptoms followed, but the nephritis remained uninfluenced. She re-entered hospital on April 11, 1899, and was treated for chronic nephritis for about one month, after which she came under my care.

Examination.—Heart and lungs normal. Moderately pronounced arteriosclerosis. Right kidney movable eight centimeters; left kidney in place. Casts of various kinds and albumin found at every examination of the urine made within five months past. Chronic appendicitis. Operation advised on right kidney to correct the displacement and with the hope of favorably influencing the chronic nephritis.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, five months.

Operation.—May 11, 1899, at Post Graduate Hospital.

Partial decapsulation and fixation of right kidney. Removal of appendix through lumbar incision.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney enlarged about fifty per cent., irregularly hardened by massive new formation of connective tissue to such an extent that on needling kidney the needles creaked audibly whenever they penetrated the kidney substance. Left kidney not operated upon.

Diagnosis.—Right chronic interstitial nephritis. Condition of left kidney not ascertained.

Convalescence uneventful. Primary union of wound.

History after operation.—On discharge of patient, five weeks after operation, albumin and casts had almost disappeared from urine. All trace of patient lost after leaving hospital.

Urine examinations.—A considerable number were made during the six months intervening between the patient's first operation and her final discharge from hospital. All showed the continued presence of chronic Bright's disease.

Result.—Improvement after five weeks. Final result not known, patient disappearing from observation after leaving hospital.

Case No. 10.

L. J., female, aged 26 years, married.

Family history good.

History prior to operation.—When a child had measles and scarlatina. Later on in life was ill for months with chlorosis. Ill since her last confinement, March 1, 1898, when she gave birth to twins. Spent five months in bed thereafter on account of extreme weakness, and has ever since suffered from abdominal pains, fainting spells, anorexia and constipation.

Examination.—Heart and lungs negative. Right kidney movable ten centimeters; left kidney movable five centimeters. Chronic appendicitis. Urine contains albumin in large amount, hyaline, granular and a few epithelial casts. Chronic nephritis diagnosed six months prior to admission.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, fourteen months.
- b) As known from urine examinations, six months.

Operation.—May 12, 1899, at St. Francis Hospital.

Partial decapsulation and fixation of both kidneys. Removal of appendix through right lumbar wound.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney two-thirds normal size, greatly indurated, and granular on surface after removing capsule. Left kidney a little large, but otherwise normal to sight and touch.

Diagnosis.—Right chronic interstitial nephritis. Left kidney healthy.

Convalescence uneventful. Primary union of both wounds.

Urine examinations.—All tests gave practically the same results, as already stated under head of Examination.

History after operation.—Patient left hospital four weeks after operation, and has neither been seen nor heard from since. The urine did not change materially during the four weeks following operation.

Result.—Not known. Patient lost sight of after departure from hospital, four weeks after operation.

Case No. 11.

S. G., female, 28 years of age, married.

Family history irrelevant.

History prior to operation.—At the age of 23, patient began to suffer from headaches, backaches, and increasing nervousness. In January, 1895, she was operated upon by a prominent surgeon of this city for movable right kidney, the organ being stitched to the abdominal wall without opening its capsule. Relief of symptoms for a year and a half followed this right nephropexy. Then the old symptoms returned, with additional pains in the left lumbar region, and the surgeon, who had operated, informed her that the right kidney was again loose. In this condition she came under my care on October 24, 1899.

Examination.—Pale, worried-looking woman, with slight œdema of feet. Examination of the urine showed albumin, ten per cent. by bulk; hyaline, granular, and a few epithelial casts, and a very low urea per cent. The existence of chronic Bright's disease was unknown up to this time. Heart and arteries presented nothing very abnormal. Right kidney quite freely movable, although apparently not quite detached from its anchorage to lumbar scar. Left kidney movable five centimeters. Chronic appendicitis.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, ten days.

Operation.—November 4, 1899, at Post Graduate Hospital.

Extensive decapsulation and fixation of both kidneys. Removal of appendix through right lumbar incision.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney was found attached to fascia of quadratus lumborum by a cylindrical band of connective tissue one and a half centimeters in diameter and about two centimeters in length. This band was attached to the outer surface of the capsule proper at a distance of about two centimeters from the upper end of the kidney, thus throwing the lower pole of the kidney almost directly forward into the abdominal cavity. The kidney was freed from its unfortunate attachment, almost completely decapsulated, and anchored anew in good position. Surface of kidney granular after removal of capsule, and kidney itself contracted and hard from presence of interstitial inflammation. Left kidney perfectly normal to touch and sight.

Diagnosis.—Right chronic interstitial nephritis. Left kidney healthy.

Convalescence uneventful. Primary union of both wounds.

Result.—Improvement during the four weeks following operation. The patient then passed from observation. Later it was ascertained that the patient died on the first anniversary of her operation, November 4, 1900, after an operation for ruptured tubal pregnancy, performed by another surgeon. There appears to be reason to believe that she was free from nephritis at the time of her death.

Case No. 12.

R. H., female, aged 22 years, single. Patient of Dr. Gerritt F. Blauvelt, Nyack, N. Y.

Family history irrelevant.

History prior to operation.—At age of 14 years, patient had a severe attack of acute articular rheumatism. Since then has suffered constantly from dyspeptic symptoms. In January, 1899, an attack of severe illness, lasting two weeks, characterized by severe pain in bowels, griping, purging, vomiting and rise of temperature up to 40.5 deg. C. Since then her general health has been steadily deteriorating.

Examination.—Patient a very slight girl, with nothing in her appearance to indicate chronic Bright's disease. Heart: loud systolic bruit over left ventricle; augmented arterial tension. Examination of urine showed the presence of albumin, hyaline, granular and epithelial casts. Right kidney movable twelve, and left kidney movable ten centimeters.

Existence of chronic Bright's disease prior to operation:
a) As indicated by symptoms, nearly two years.
b) As verified by examination of urine, three days.

Operation.—November 5, 1900, at Post Graduate Hospital.

Partial decapsulation and fixation of both kidneys, and excision of appendix through right lumbar incision.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney perfectly normal to sight and touch. Acute left perinephritis, the fatty capsule being angrily congested, intensely swollen and very œdematous. Left kidney twice as heavy as right, irregularly and nodularly hardened. The connective tissue and fatty

capsule immediately adjacent to kidney are especially œdematous. Capsule proper irregularly and unevenly thickened, and difficult to detach from kidney without breaking away pieces of the latter.

Diagnosis.—Left chronic interstitial nephritis and acute perinephritis.

Convalescence uneventful. Right wound healed by primary union. Late suppuration in depths of left wound, from breaking down of inflamed fatty capsule.

History since operation.—Coeliotomies for other conditions, not connected with the kidneys, later became necessary, and were performed by the writer on November 19, 1900, and October 19, 1901, ether being each time employed as the anæsthetic. After many ups and downs, the patient finally reached good health in about a year and a half after operation. For the past two years she has been abundantly satisfied with the state of her health. When last seen, January 19, 1904, she was looking and feeling perfectly well, the only drawback to full satisfaction being the persistence of the old cardiac lesion, which, however, is fully compensated and does not trouble her. Last advices, received July 1, 1904, affirm the continuance of good health.

Urine examinations.—Of about fifteen urine examinations made in all, the records of most of the earlier ones have been lost. Only seven records remain in my possession, all of which are here given. The urine became normal two months after operation, and has so remained, if we except a tendency to low specific gravity and urea output, the latter being undoubtedly an expression of the patient's rheumatic tendencies.

CASE No. 12.—R. H., female, 22 years of age; weight, 46 kilograms.

Operation: November 5, 1900.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Apr. 17, 1901.		1012		0.8%	none.	None.
Oct. 9, 1901		1008		0.3%	none.	None.

Nov. 16, 1901.		1004		0.5%	none.	Rarely a small hyaline and fine granular. "Aside from very low specific gravity, urine appears normal."—Prof. Brooks.
May 17, 1902.		1015		2.0%	minute trace.	Rarely a small hyaline and fine granular.
Feb. 4, 1903.	1800 c. c.	1010	25.16 grams.	9.72 grams in 24 hours.	trace.	None.
Dec. 31, 1903.	1560 c. c.	1012	43.62 grams.	7.8 grams in 24 hours.	none.	Rarely a hyaline.
June 30, 1904.	840 c. c.	1013	30.29 grams.	10.08 grams in 24 hours.	none.	Very rarely a hyaline.

Result.—An ideal cure of left chronic interstitial nephritis, associated with acute perinephritis, attained two months after operation and maintained to the present time, more than three and a half years after operation. The general health of the patient remains satisfactory, in spite of a well marked tendency to rheumatic manifestations, and the urine is normal.

Case No. 13.

M. D., female, 19 years of age, single.

Family history negative. Parents, brothers and sisters all alive and enjoying good health.

History prior to operation.—Patient totally blind since five years of age. Malaria nine years ago, and rheumatism one year ago. For three years past has suffered much from backache, severe headache and vomiting.

Examination, Nov. 28, 1900.—Complains chiefly of pains in back, constant occipital headaches, insomnia and attacks of vomiting. Heart sounds good; increased arterial tension. Right kidney movable seven centimeters; left kidney not palpable. Examination of urine reveals the presence of albumin and of hyaline, granular and epitheliated casts in large number. No examinations of the urine had been made prior to the patient's coming under my care, and the prior duration of the nephritis can only be estimated.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, probably three years.
- b) As verified by examination of urine, two days.

First operation, November 30, 1900, at St. Francis Hospital.

Partial decapsulation and fixation of right kidney, and excision of appendix through lumbar incision.

Second operation, April 19, 1901, at St. Francis Hospital.

Partial decapsulation and fixation of left kidney.

Anæsthetic.—Ether, both operations.

Condition of kidneys at operation.—Right kidney about normal in size, hard and fibrous, the needle creaking in passing through renal substance. Surface mottled after removal of capsule. Fatty capsule of left kidney irregularly thickened, fibrous in structure, and very adherent to capsule proper, as a result of chronic perinephritis. Left kidney two-thirds normal size, irregularly contracted and indented by reason of much new formation of connective tissue in its substance. Capsule proper very adherent to kidney.

Diagnosis.—Right and left chronic interstitial nephritis, with the inflammatory process much farther advanced in left than in right kidney.

Convalescence.—Febrile after operation on right kidney. Suppuration of right wound due to breaking down of a perirenal hæmatoma. Primary healing of left wound.

History since operation.—Patient suffered from a complication of abdominal and pelvic disorders requiring a number of operations for their relief. Such operations were performed by me on four different occasions, on January 22, 1901, on January 16, 1902, on April 25, 1902, and finally on March 18, 1903. Improvement followed each operation and for the past year the patient has, for the first time in her life, enjoyed uninterrupted good health. Under date of December 23, 1903, she writes: "Regarding the present condition of my health, I may safely say that it is all I could desire." She is the picture of health and contentment, and the incarnation of gratitude. Both kidneys remain firmly anchored. The latest report, dated May 14, 1904, states that she is suffering mildly from a return of her old rheumatism, but is otherwise quite well.

Urine examinations.—The records of six out of some twenty that have been made remain in my possession, and are appended. The record of urine examinations made prior to operation has, unfortunately, been lost.

CASE No. 13.—M. D., 19 years of age, single; weight, 32 kilograms.

Operation: November 30, 1900, and April 19, 1901.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Oct. 22, 1901.		1012		1.5%	negative, Heller, faint trace, Esbach.	Occasional large and small hyaline and fine granular. "Hyperæmia; practically normal."—Prof. H. T. Brooks.
Jan. 23, 1903.	650 c. c.	1016	24.26 grams.	11.7 grams in 24 hours	faint trace, Esbach.	None.
Oct. 15, 1903.		1004		1.1%	none.	None.
Dec. 23, 1903.	780 c. c.	1018	32.71 grams.	8.58 grams in 24 hours.	very faint trace, Esbach.	Occasional hyaline.
March 29, 1904.	1140 c. c.	1017	45.16 grams.	20.52 grams in 24 hours.	none.	None.
May 14, 1904.	1320 c. c.	1012	36.9 grams.	15.84 grams in 24 hours.	none.	Occasional hyaline.

Result.—An ideal cure of right and left chronic interstitial nephritis attained in about ten months after operation upon the right, and five months after operation upon the left kidney, and maintained to the present time, three and a half years after the first, and more than three years after last operation. The urine is practically normal and the patient is perfectly well.

Case No. 14.

L. K., female, 23 years of age, married. Patient of Dr. Henry Ruhl, 842 East 164th Street, New York.

Family history.—Mother died in 1887, of diabetes, at age of forty, after three years of illness. Only sister died in 1897, at age of twenty-five, of chronic Bright's disease, the immediate mode of death being convulsions and apoplexy. Father died in 1902, at age of fifty-seven, of complicated chronic Bright's disease, life terminating by œdema of the lungs. Her only brother, twenty years of age, is apparently in good health.

History prior to operation.—Though never robust, patient

considered herself well until a year ago. Since then dull back-ache, almost constant brow and eye headaches, and uræmic manifestations. Chronic Bright's disease was discovered on examination of the urine a year ago. Dr. Ruhl advised operation upon both kidneys for the purpose of curing or improving the chronic nephritis, as well as of relieving the symptoms due to mobility of the kidneys.

Examination.—Pale, thin woman, weighing but 41 kilograms. Decided cardiac hypertrophy; sounds very strong, and a little arrhythmical. Moderate arteriosclerosis and high-tension pulse. Right kidney movable ten to twelve centimeters; left kidney movable seven to eight centimeters.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, about three years.
- b) As verified by urine examination, one year.

Operation.—April 6, 1901, at home of patient.

Partial decapsulation and fixation of both kidneys and lumbar appendicectomy.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney about two-thirds normal size, indurated, and presenting typical granular appearance on removal of capsule proper. Capsule irregularly thickened and very adherent to kidney. Left kidney in approximately the same condition as right, with the addition that it contained a cyst two centimeters in diameter in its lower pole.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Patient has been particularly unfortunate in being otherwise ill for the greater part of the time elapsed since operation. Thus she has had one attack of diphtheria, colds without number, two or three mild and one severe attack of grippe. To each new infection the kidneys responded with an exacerbation of the chronic nephritis, and the patient has been able to make only *very* slow headway in regaining her general health as well as the health of her kidneys. I did not see her from the date of operation until January 27, 1904, when she called at my office with her husband. I found her color improved and the patient acting more nearly like a well woman than before operation. Her stomach,

as she expresses it, goes back on her now and then, and she still has headaches, while the backaches have practically disappeared. Heart's action normal in every way, and both kidneys securely anchored. Ophthalmoscopic examination, made early in 1904, showed fundus of each eye to be normal.

Urine examinations.—At least thirty records, covering the case from before operation to the present time, are in my possession. Patient has suffered from one or another general and renal infection practically all the time since operation, and it was scarcely possible to get an interval specimen.

CASE No. 14.—L. K., female, 23 years of age; weight, 41 kilograms.

Operation: April 6, 1901.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
April 2, 1901. (before operation.)		1014		1.2%	25% by bulk, Esbach: 0.05%	Numerous hyaline, granular. Occasional mixed. Occasional blood and pus cells and granular renal epithelium.
May 6, 1901.		1008		0.9%	distinct reaction.	Large numbers hyaline, fine granular and epitheliated. Occasional fine fatty.
June 12, 1901.		1015		1.6%	30% by bulk, Heller.	Large numbers small hyaline, fine granular, epitheliated and mixed (blood, leucocytes, granula and epithelia). Occasional blood and pus cells.
Oct. 29, 1901.		1014		1.2%	10% by bulk, Heller.	Numerous large and small hyaline and fine granular, occasional epitheliated and mixed (leucocytes, red cells, and granula). Occasional blood and pus cell.
Jan. 27, 1902.		1006		0.7%	10% by bulk, Heller.	Large numbers of all kinds, chiefly hyaline and granular. Pus in isolated cells and in small masses.
June 2, 1902.		1012		1.5%	10% by bulk, Heller.	Large numbers all kinds, except waxy. Occasional blood cell. Pus cells, singly and in small masses. Rarely a granular renal epithelium.
Nov. 18, 1902.		1012		1.3%	20% by bulk, Heller.	Large numbers small hyaline, fine granular, and occasional epitheliated. Occasional isolated leucocyte.
Jan. 29, 1903.	1080 c. c.	1013	32.71 grams.	14.04 grams in 24 hours.	1.08 grams in 24 hours.	Numerous, all kinds except blood. A few blood cells. Very numerous pus cells.
June 24, 1903.	1750 c. c.	1013	53.0 grams.	8.75 grams in 24 hours.	trace.	Frequent hyaline. Occasional epitheliated hyaline. Many mucous cylindroids Occasional leucocyte.

Dec. 22, 1903.	1530 c. c.	1014	49.9 grams.	13.005 grams in 24 hours.	marked trace.	Fairly frequent hyaline. Rarely an isolated blood cell. Moderately frequent leuco- cytes.
April 18, 1904.	1800 c. c.	1010	41.94 grams.	16.2 grams in 24 hours.	distinct trace.	Rather frequent hyaline. Rarely a granular. Frequent isolated red cells. Moderate number of leuco- cytes.

Further history of the patient.—In the latter part of April, 1904, decided symptoms of gradually deepening uræmia became manifest. All the usual means failed to modify or arrest the downward course of the disease, and in May, 1904, Dr. Ruhl advised a second decapsulation of the kidneys for the purpose of increasing the output of urea. The total amount of urea and solids excreted by the kidneys for one week during May, 1904, was as follows:

	Total urea in 24 hours.	Total solids in 24 hours.
May 5.....	11.25 grams.	34.95 grams.
May 6.....	13.77 “	35.65 “
May 7.....	12.15 “	28.31 “
May 8.....	13.50 “	34.95 “
May 9.....	12.96 “	33.97 “
May 10.....	13.50 “	31.46 “
May 11.....	11.52 “	40.26 “
Total for one week.....	88.65 “	239.55 “
Daily average.....	12.66 “	34.22 “

Second operation.—May 26, 1904, at home of patient.

Completed decapsulation of both kidneys.—The balance of capsule left at first operation was completely removed from both kidneys, leaving undisturbed the firm anchorages effected by the first operation.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidneys at second operation.—The portions of capsule left at first operation, three years previously, were found a little thicker, but less firmly adherent than at first operation. Both kidneys of same size as at first operation. The denuded surfaces of the kidney appeared less granular, and the kidneys themselves were decidedly softer than at the first operation. They presented the characteristics of chronic diffuse nephritis rather than those of chronic interstitial nephritis, noted three years previously.

Convalescence uneventful. Primary healing of both wounds.

History after second operation.—The total daily amount of urea and solids excreted by the kidneys was determined for three weeks following operation. Some of the records were unfortunately mislaid, and cannot be found. Following are the records in my possession, relating to the first twelve days after operation:

	Total urea in 24 hours.	Total solids in 24 hours.
May 27.....	12.09 grams.	23.84 grams.
May 28.....	23.01 “	45.37 “
May 31.....	27.84 “	48.65 “
June 4.....	19.89 “	35.65 “
June 5.....	17.22 “	28.66 “
June 6.....	17.64 “	35.23 “
June 7.....	14.82 “	23.90 “
Total for seven days.....	132.51 “	241.30 “
Daily average.....	18.93 “	34.47 “

The records for May 29 and 30, and for June 1, 2 and 3, were lost. The urea output of each of these days varied between 20 and 25 grams, although the exact figures cannot be given. The average daily output of urea for the first ten days after operation was, therefore, somewhat above 20 grams, and this in spite of the fact that the patient was necessarily kept in bed and on a very restricted diet. This makes a comparison with the figures before operation all the more interesting and instructive. It will be noted that while the total amount of solids excreted by the kidney before and after operation was practically identical, the urea output was increased by about sixty per cent. During the first week following operation it was more than doubled as compared with a similar period before operation.

Coincidentally with the elimination of the urea stored in the system, the symptoms of uræmia entirely disappeared, and at date of going to press, three weeks after the second decapsulation of her kidneys, the patient is feeling better by far than she has for a long time past.

Result.—Steady improvement for about eight months after first operation. After that, almost continuous illness of one kind or another prevented the progress that would otherwise in all probability have been made. Finally, after nearly three years, a decided, though only temporary improvement in the work of the kidneys, was soon followed by profound func-

tional impairment of the organs. Decided improvement to date as a result of the second decapsulation, though it is, as yet, too early to speak of a final result.

Case No. 15.

R. K., female, 31 years of age, married. Patient of Dr. Henry Ruhl, 842 East 164th Street, New York.

Family history excellent. Father, mother, three sisters and one brother alive and well.

History prior to operation.—Backaches all her menstrual life. For past year violent dyspepsia, gastric eructations and distress, bloating, constipation, excessive nervousness, pains in both groins and rapid loss of weight. Weight one year ago, 57 kilograms; present weight, 45.5 kilograms.

Examination.—Patient pale and emaciated. Slight œdema of ankles. Heart sounds normal; moderately increased arterial tension. Both kidneys movable to extreme limit. Chronic appendicitis. Patient two months pregnant. Tumor of left ovary, about seven centimeters in diameter. Urine contains albumin, hyaline, granular and a few epithelial casts.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year.
- b) As known from urine examination, one week.

Operation.—April 15, 1901, at Post Graduate Hospital.

Partial decapsulation and fixation of both kidneys.
Removal of appendix through right lumbar incision.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Fatty capsule on both sides exceedingly vascular. Capsule proper of both kidneys thickened, opaque, and at places fibrous in character. Both kidneys a trifle large, lobulated, much harder than normal. Surface after removal of capsule mottled, anæmic in spots, congested in other places.

Diagnosis. Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds. One week later, April 22, 1901, under ether, ovariectomy for removal of cystoma of left ovary, seven centimeters in diameter. Pregnancy not disturbed by either operation. Primary union of abdominal incision.

History since operation.—Patient improved rapidly in

every way immediately after operation. Miscarried at six months, in August, 1901, the child living but one hour. Seven months after operation the urine became normal. One year after operation the patient considered herself a well woman in every way, and has so remained to the present writing. A second pregnancy terminated at seven months, on November 7, 1903, with birth of a child which lived thirteen days. Latest report from patient, dated June 25, 1904, reads: "The state of my health, I think, is perfect. Am looking very well and gaining in weight."

Urine examinations.—Records of earlier examinations lost. Seven of the later ones remain in my possession.

CASE No. 15.—R. K., female, 31 years of age; weight, 57 kilograms.

Operation: April 15, 1901.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts. *
Nov. 4, 1901.		1005		0.3%	none.	None.
May 22, 1902.		1012		1.0%	nonc.	Rarely a small hyaline.
Feb. 4, 1903.	1680 e. c.	1012	46.98 grams.	16.8 grams in 24 hours.	nonc.	None.
Jan. 6, 1904.	2520 e. c.	1014	82.2 grams.	30.24 grams in 24 hours.	trace.	Moderately frequent hyaline. "Transient renal irritation and hyperactivity."
Apr. 11, 1904.	1440 e. c.	1020	67.1 grams.	28.8 grams in 24 hours.	none.	Very rarely a hyaline.
July 7, 1904.	1800 e. c.	1014	58.72 grams.	28.8 grams in 24 hours.	none.	Very rarely a hyaline.

Result.—An ideal cure of right and left chronic interstitial nephritis, established seven months after operation, and persisting to date, three years and three months after operation.

Case No. 16.

I. H., female, 33 years of age, single. Patient of Dr. George H. McGuire, 737 East 145th Street, New York.

Family history.—Her mother died of cancer, her father

of consumption, and a sister of abscess on the brain.

History prior to operation.—At age of fifteen an attack of fever, of unknown character, confined her to bed for four weeks. For past six to eight years gnawing in epigastrium, uneasy sensations in stomach, nausea, fainting spells. Lately backache in addition. Always delicate. Repeated examination of urine by Dr. McGuire for one month prior to operation always showed the characteristic changes of chronic Bright's disease.

Examination.—Slight puffiness of face and swelling of ankles. Systolic bruit over apex and extending to base of heart. Pulse accelerated, but otherwise normal. Both kidneys movable to extreme limit; I have never seen greater mobility. The right kidney can be easily displaced across the front of spine, and can be placed in any part of the right or left half of abdomen. With patient standing, both kidneys fall into and fill pelvic inlet, lying side by side in closest contact with each other. Chronic appendicitis.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, six years.
- b) As determined by urine examination, one month.

Operation, May 6, 1901, at Post Graduate Hospital.

Partial decapsulation and fixation of both kidneys. Removal of appendix through right lumbar incision.

Anæsthetic.—Ether.

Condition of kidneys at operation.—Right kidney slightly and uniformly enlarged and hard. Capsule proper very adherent and irregularly thickened. Beef red mottling of kidney surface after stripping off capsule. Left kidney shows far advanced changes. Fatty capsule firmly adherent to capsule proper, as a result of chronic perinephritis, with three or four large vessels connecting the two. Upper half of left kidney presents changes identical with those found in right kidney. Lower half of left kidney shrunken in size and studded with innumerable nodules, each nodule composed of a dense connective tissue envelope enclosing a yellow gelatinous material. In size and appearance the nodules so greatly resembled degenerated tubercles, that a piece of kidney tissue containing several nodules was excised and sent to Prof. H. T. Brooks for immediate examination of a frozen section. Prof. Brooks sent

back the report, in twelve minutes: "Chronic nephritis; no tubercles," whereupon the operation was completed.

Diagnosis.—Right and left chronic diffuse nephritis with extensive small cyst formation in left kidney. Diagnosis verified by microscopic examination of a piece of kidney tissue.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Improvement in all directions in evidence soon after operation. In a year after operation all symptoms had disappeared, and the patient has since considered herself well, again filling her station in life as a teacher. The urine became normal one year after operation, and has remained so since. Her only complaint is that she remains thin. Last report, May 16, 1904, states that she remains perfectly well, though still thin.

Urine Examinations.—Seven records remaining in my possession are subjoined; earlier records have been lost.

CASE No. 16.—I. H., female, 33 years of age; weight, 48.5 kilograms.

Operation: May 6, 1901.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
June 26, 1901.		1008		0.7%	none.	Rarely a small hyaline.
Nov. 6, 1901.		1009		1.0%	distinct trace.	Occasional small hyaline and fine granular, rarely an epitheliated. "Hyperæmia? Very slight evidence of renal disturbance." Prof. H. T. Brooks.
Jan. 15, 1902.		1030		4.2%	faint trace.	Large numbers of small hyaline and fine granular, rarely an epitheliated. "Gouty kidney?"—Prof. H. T. Brooks.
May 19, 1902.		1018		2.0%	faint trace.	None. "I can find no microscopic evidence of renal lesion here." —Prof. H. T. Brooks.
Jan. 20, 1903.	750 c. c.	1022	41.445 grams	16.5 grams in 24 hours.	none.	None.
Dec. 23, 1903.	600 c. c.	1031	43.34 grams.	13.8 grams in 24 hours.	none.	Few hyaline.
May 16, 1904.	690 c. c.	1022	35.37 grams.	12.42 grams in 24 hours.	none.	Very rarely a hyaline.

Result.—An ideal cure of right and left chronic diffuse nephritis, attained in one year after operation, and maintained to the present time, three years after operation.

Case No. 17.

(For further details of Case No. 17, see pages 18 to 21.)

M. S., female, 33 years of age, married. Patient of Dr. T. W. Vardon, Galt, Ontario, Canada, and Dr. H. Howitt, Guelph, Ontario, Canada.

Family history not pertinent.

History before operation.—Detailed in full on page 18.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, five years.
- b) As known from urine examination, five years.

Operation.—October 17, 1901, at Galt General Hospital, Galt, Ontario, Canada.

Decapsulation of both kidneys. Operation detailed in full on page 19.

Anæsthetic.—Ether.

Condition of kidneys at operation.—See page 20.

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary healing of both wounds. Drainage for a few days by strands of silk-worm gut.

History since operation.—Detailed in part on page 20.

Result.—Patient rescued from immediately impending death, and marvelous improvement for some six weeks after operation. Then an intercurrent attack of suppurative pyelonephritis, or rather an acute exacerbation of a renal infection existing prior to operation, to which the patient succumbed on December 15, 1901, two months after operation.

Case No. 18.

(For fuller details of Case No. 18, consult pages 21 to 24.)

C. B., female, 39 years of age, married, mother of four children. Patient of Dr. A. O. Bogert, Spring Valley, Rockland County, New York.

Family history.—Good; father and mother both living and enjoying good health.

History prior to operation.—The remarkable history of this patient has been detailed in full in my paper of December 21,

1901. I will attempt to condense it here. Patient first seen March 14, 1901. Her fourth and last pregnancy terminated on February 12, 1901, with the birth of a living child at term. During the entire pregnancy she had suffered, and was still suffering when I saw her, from chronic nephritis and a fatty heart. The first two weeks of the puerperium were uneventful, except for the persistence of the chronic Bright's. Then sepsis, due to sloughing of an intraligamentous uterine fibroma, developed. Under ether anæsthesia, the sloughing fibroid was removed in one piece with uterus, tubes and ovaries by abdominal section, on March 17, 1901. A double pneumonia of the severest type developed on the day after operation, and lasted ten days. The patient was kept alive during this time only with the greatest difficulty. A urinary fistula formed as a result of sloughing of a part of the bladder wall, and the abdominal incision broke down as a result of a pneumococcus infection of the wound. On April 15, 1901, an acute *proteus* infection of the right kidney developed, characterized by a painful swelling of the organ, with pyuria and a decided increase in the amount of albumin and the number of casts habitually present in the urine. This was followed by severe symptoms of secondary general sepsis, which lasted for about ten days. In May, June and July of 1901, patient had three similar attacks, each one leaving her nearer the verge of the grave. During the July attack the temperature ran up to 40.8 deg. C., with a pulse rate of 160, and it was resolved to hazard a right nephrectomy as giving her the only chance for life. The large right kidney, riddled with innumerable abscesses, and with its pelvis filled with pus, was removed under ether on July 9, 1901. Prof. Brooks pronounced it chronic parenchymatous nephritis with infection.

Following removal of the septic right kidney, the abdominal incision and the vesical fistula, which for over four months had refused to heal, closed spontaneously within ten days after operation. The nephrectomy wound healed kindly, and in three weeks the patient left her bed, soon gained six kilograms in weight, gradually resumed her usual occupations, and considered herself in fair health. Albumin and casts, with small quantities of pus, however, persisted in the urine, and Prof. H. T. Brooks called it chronic Bright's disease, with some

insidious infection of the remaining left kidney.

As time wore on, the improvement in health ceased and the characteristic pallor, puffiness of the face, and œdema of the lower extremities, due to chronic Bright's disease, came to the foreground. It was resolved to decapsulate the remaining (left) kidney.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, 16 months.
- b) As verified by examination of urine, 16 months.

Operation, November 10, 1901, at home of patient, where likewise all her previous and subsequent operations were performed.

Complete decapsulation of left kidney.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidney at operation.—Typical large, white kidney, with minute abscesses visible here and there in its substance.

Diagnosis.—Chronic parenchymatous nephritis, with infection. Diagnosis confirmed by Professor Brooks on microscopic examination of a particle of kidney tissue removed at operation.

Convalescence uneventful. Primary union of wound, drainage not being employed.

History after operation.—Pus in the urine persisted after operation, and on two occasions a brief outbreak of sepsis, of renal origin, alarmed the patient as well as her physicians. Urotropin seemed to control the condition in great part, and was taken constantly. Patient's general health improved to such an extent that on February 10, 1902, under nitrous oxide and oxygen anæsthesia, operations for the radical cure of a ventral and of a lumbar hernia, the remnants of two former operations, were undertaken and successfully carried out, both wounds healing primarily.

From October 1, 1901, to November, 1902, a period of more than a year, the patient took from six to eight grams of urotropin daily. After March, 1902, there was no further attack of general sepsis, although the pyuria, albumin and casts persisted. Her general health improved to such an extent that she was able to do all the work of an exacting household. Her weight increased to 67 kilograms, and her

friends averred that she never looked better in her life. A chronic cystitis, with great thickening and injection of the bladder wall, persisted, but gave no subjective symptoms, except when transiently passing into an acute stage. In November and December of 1902, a determined effort was made to get rid of the chronic urinary infection by local treatment of the bladder, and by the cumulative administration of urotropin, of which ten, eleven, and thirteen grams were given on three successive days, and followed by from four to six grams daily for a month. The attempt was successful, as far as the vital matter of dislodging the pus from the kidney was concerned, no pus casts having been found in any specimen of 1903 or 1904. Pyuria, due to chronic cystitis, however, persists, although in constantly lessening degree; and while it persists there is always risk of reinfection of the kidney. The cystitis, although constantly present, has not, for more than a year past, annoyed the patient in any way. As long as she is feeling so perfectly well, as she has for nearly two years past, she declares, she will not undergo treatment for the cystitis other than taking urinary antiseptics internally. When last seen, in January, 1904, patient presented the picture of health. She was well nourished, of good color, with former puffiness and flabbiness all gone. As already stated, she has not a single symptom to complain of, is doing a great amount of housework, and at the same time nursing an ill husband. As far as her feelings and appearance are concerned, there is nothing to indicate anything else than perfect health. Last report, May 25, 1904, states that she remains perfectly satisfied, in every way, with the state of her health.

Urine examinations.—Of the more than one hundred examinations which have been made during the more than three years the patient has been under my observation, I find I am still in possession of fifty-two, from among which the following are selected. In order to judge of the time relation of the several examinations recorded to the various operations performed, the following list of dates may be found useful:

July, 1900.—Chronic Bright's disease recognized during the beginning of patient's fourth pregnancy.

February 12, 1901.—Birth of living child at term.

March 17, 1901.—Abdominal hysterectomy for sloughing

uterine fibroma, followed by a severe attack of double pneumonia.

July 9, 1901.—Right nephrectomy for suppurative pyelonephritis.

November 10, 1901.—Complete decapsulation of left kidney.

February 10, 1902.—Operations for ventral and for lumbar hernia.

November, 1902.—Cumulative administration of urotropin.

CASE No. 18.—C. B., female, 39 years of age; weight, 67 kilograms.

Operation: November 10, 1901.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
April 25, 1901, after hysterectomy, before decapsulation.		1014		1.5%	strong reaction.	Occasional granular and mixed (fat, epithelia, blood and leucocytes). Occasional blood cells. Innumerable pus cells, often in large masses. Occasional granular renal epithelium; numerous atypical fatty epithelia. Catheter specimen.
May 23, 1901, after hysterectomy, before decapsulation.		1019		2.1%	distinct trace.	Numerous coarsely granular; occasional epithelial and mixed. Innumerable pus cells, often in masses resembling casts. Numerous granular renal elements. Catheter specimen.
July 16, 1901, after right nephrectomy, before decapsulation of left kidney.		1010		1.3%	distinct reaction.	Large numbers hyaline, epithelial and mixed (leucocytes, epithelia and red cells). Occasional blood and numerous pus cells. Large numbers granular renal elements. Innumerable bacteria of proteus type. Catheter specimen.
July 31, 1901, after nephrectomy, before decapsulation	1620 c. c.	1005	18.88 grams.	8.1 grams in 24 hours.	distinct trace.	Rarely a fine granular and epithelial. No blood; no pus.
Oct. 22, 1901, before decapsulation		1013		1.7%	distinct reaction.	Occasional hyaline, granular and mixed (epithelia, leucocytes and granula). Occasional isolated pus cells.
Nov. 13, 1901, three days after decapsulation.		1010		1.2%	25% by bulk, Heller.	Numerous large and small hyaline, granular, mixed, epithelial and fatty; occasional epithelial. Pus cells: numerous isolated, occasional small masses. Catheter specimen, very characteristic of perfect shower of renal elements frequently noted during first days after decapsulation.

Dec. 17, 1901.		1013		1.5%	5% by bulk, Heller.	Numerous hyaline, granular and mixed; also occasional pus cast. Innumerable pus cells, often in large masses. "Suppurative nephro-pyelitis." —Prof. H. T. Brooks.
Jan. 16, 1902.		1009		1.4%	15% by bulk, Heller	Numerous mixed, and occasional pus casts. Large numbers pus cells, chiefly isolated. Large numbers granular and partially disintegrated renal elements. "Extension of infection?" —Prof. H. T. Brooks.
Feb. 17, 1902.		1013		1.6%	none.	Rarely a small hyaline. Occasional leucocyte. The best specimen thus far obtained.
March 9, 1902.		1014		1.6%	20% by bulk, Heller.	Numerous casts of all kinds, chiefly granular, hyaline and epitheliated. Large numbers isolated blood cells. Innumerable pus cells, occasionally in small masses. Numerous granular renal elements.
April 14, 1902.		1010		1.1%	15% by bulk, Heller.	Numerous hyaline and fine granular, rarely a fine fatty and mixed (pus, epithelia and granula.) Numerous isolated blood cells. Innumerable pus cells, often in small masses.
Oct. 14, 1902.		1018		2.0%	5% by bulk, Heller.	Occasional small hyaline and fine granular. Numerous isolated pus cells; occasional small masses. Rarely a granular renal element.
Dec. 12, 1902.	1155 c. c.	1015	40.367 grams.	24.255 grams in 24 hours.	0.5775 grams in 24 hours.	Occasional small hyaline and fine granular. Rarely a partly pus. Large numbers pus cells, chiefly isolated.
April 1, 1903.		1019		2.2%	10% by bulk, Heller.	Occasional large and small hyaline, fine granular and mixed. Occasional isolated blood cell. Innumerable pus cells, often in masses. Occasional granular renal elements.
June 29, 1903.		1021		2.4%	5% by bulk, Heller.	Numerous very small hyaline and fine granular, occasional epitheliated. Occasional isolated blood and pus cells.
Jan. 4, 1904.	1065 c. c.	1025	62.036 grams.	29.82 grams in 24 hours.	distinct trace.	Rather frequent hyaline. Rarely an isolated red blood cell. Pus cells, isolated and in masses. No renal elements.
May 25, 1904.	630 c. c.	1020	29.36 grams.	15.75 grams in 24 hours.	distinct trace.	Rarely a hyaline. Occasional red cell. A few leucocytes.

Result.—The kidney infection plays so dominant a role throughout the entire history of the case that it is not easy to judge of the results, as far as the chronic nephritis existing before infection is concerned. The results of the last urine examination show no kidney elements except hyaline casts. Albumin is present in quantities not greater than can be accounted for by the pus from the persistent mild cystitis. Taking the urine examinations in connection with the patient's general good health and appearance, it would not seem strained to speak of a cure of the chronic nephritis.

Case No. 19.

(Compare page 72.)

A. B., female, 43 years of age, single. Patient of Dr. F. Schwyzer, 54 East 58th Street, New York.

Family history.—A brother died of chronic Bright's disease.

History before operation.—Malaria seven years ago. Habits dissolute; a confirmed inebriate. Edema of feet since April, 1900, and of face since October, 1901. Uræmic manifestations of various kinds for two months past.

Examination.—Patient a small, thin woman, weighing about 46 kilograms, with characteristic œdema and pallor of face. Feet greatly swollen. Heart immensely hypertrophied; loud mitral systolic and diastolic murmurs. Average of seven urine examinations, made on seven days preceding operation, gave: daily quantity, 1,000 c. c.; specific gravity, 1.010; total daily solids, 23.3 grams; daily output of urea, 4.5 grams; albumin, 0.35 grams per diem; casts of all varieties in great abundance.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, two months.

Operation.—December 3, 1901, at St. Francis Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys contracted to less than half their normal size, and hardened, as a result of interstitial inflammation. Typical granular condition of surfaces of both kidneys after removal of capsule proper.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Marked improvement in general health promptly followed operation. The dropsy disappeared, the patient's strength and color returned, and, in four weeks, she was able to leave hospital. She resumed her former dissolute habits, was picked up drunk on the streets a number of times, and finally landed in the Almshouse Hospital, where she died, December 9, 1902, one year after operation. The death certificate gives chronic interstitial nephritis and endocarditis as the causes of death.

Urine examinations were made to the number of some forty. The urine examinations of seven days prior to operation have already been given. Two weeks after operation, the daily quantity had increased from 1,000 c. c. to 1,940 c. c.; the daily output of solids from 23.3 grams to 45.2 grams; and the daily excretion of urea from 4.5 grams to 14.0 grams; while the albumin had diminished from 0.35 grams per diem to a faint trace, and there was a marked change for the better in the number and kind of casts. This improvement was maintained during the entire time of the patient's stay in hospital. After that there were fluctuations in the character of the urine for some months, after which time she disappeared from observation.

Result.—After temporary improvement, death of patient, one year after operation, from endocarditis, the chronic nephritis persisting. With condition of kidneys as noted at time of operation, conjoined with patient's dissolute habits, no other result could have been expected.

Case No. 20.

(Compare page 83.)

J. T. I., male, 26 years of age, single, physician.

Family history.—The doctor has kindly furnished the following interesting details concerning his family history. His mother died during an abdominal operation, at the age of forty-four. Three relatives, all on the mother's side, have died during attacks of hæmaturia, and three further relatives, also on the maternal side, have had attacks of hæmaturia, from which they recovered.

CASE No. 20.—J. T. I. Table of cases of renal hemorrhage occurring on the maternal side of patient's family.

Case No.	Name.	Relation to patient.	Number of attacks.	Result.
1	J. T.	uncle	2	Died of second attack of renal hemorrhage, at age of 12.
2	J. McC., Sr.	uncle	3	Alive at age of 45.
3	J. McC., Jr.	cousin	1	Alive at age of 19.
4	M. McC.	aunt	1	Died of first attack of renal hemorrhage, at age of 25.
5	J. M.	cousin	3	Died of abscess of liver, at age of 23.
6	L. M.	cousin	1	Died of first attack of renal hemorrhage, at age of 21.

"The cause of the hæmaturia was invariably malaria, the functions of the kidney being suspended and profuse renal hemorrhages occurring. I myself, though living in the same district, have but once or twice had a malarial infection, and then of insignificant character. With the exception of the renal complications of malaria, I can discover no suspicion of kidney disease in either my father's or mother's relations. Careful investigation has led me to believe that my relations were not more susceptible to malarial hæmaturia than others residing in the same general neighborhood."

History prior to operation.—Patient had the ordinary diseases of childhood, including scarlet fever. Two attacks of continued fever, one fourteen years ago, lasting four weeks, and one twelve years ago, lasting six weeks. Influenza during five consecutive winters, from 1896 to 1900. In December, 1900, very severe hæmaturia, accompanying influenza, and some blood in the urine ever since. Constant backache, frequent headaches, hæmaturia and progressive loss of strength the main symptoms. Never any œdema. Retinal examinations always negative.

Examination.—Pallor and cachectic appearance of face. Moderate cardiac hypertrophy; heart sounds strong, but otherwise normal. Moderate emphysema pulmonum. High-tension pulse. Both kidneys in place; right kidney easily palpable and large; left kidney not readily felt.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As demonstrated by urine examination, eighteen months.

Operation.—January 27, 1902, at Post Graduate Hospital.
Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right chronic perinephritis, the fatty capsule being greatly indurated, especially near surface of kidney. Stellate veins on capsule proper and large vessels in perirenal fat especially notable. Both kidneys large, fifteen centimeters long, and of corresponding thickness, fatty in appearance and to touch. Capsules easily detached. Kidney surfaces, after removal of capsules, mottled yellow and red.

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—The tendency to renal hemorrhages, generally coincident with the contraction of a severe cold, has played the dominating rôle in respect to the patient's condition at various times since operation. When hemorrhage was free, the patient became correspondingly weak and depressed. One year after operation, under date of January 24, 1903, the doctor writes: "Comparing my condition of health during the twelve months prior to my operation in January, 1902, with that of the twelve months succeeding, I feel greatly encouraged, and am confident that, whereas there was a progressive though gradual decline in health before operation, there has been even a more marked, yet also a very gradual, improvement since. At times the course of improvement has been interrupted by acute outbreaks, which in every case were the result of colds; but the general tendency toward what has seemed complete recovery has not been altered. At the present writing I consider myself far from well, yet I must admit that to all appearances I am a stronger, healthier man than when I first discovered the existence of my nephritis, two and a half years ago."

Again, a year later, under date of March 25, 1904, the doctor writes: "With the exception of constant backache, which only occasionally becomes distressing, I have good health, and am able to give due attention to my practice. My health since operation has been better than before, though at the present writing I am physically weaker, due, I think, in

great part to lack of exercise. Excessive physical or mental activity seems to induce hæmaturia."

Urine examinations.—I have records of at least thirty-five urine examinations, seven of which are subjoined. Several very favorable reports, indicating decided progress between February 14, 1902, and November 22, 1902, are in my possession, but, as they were made by examiners to me personally unknown, I have refrained from publishing them. The bad showing of November 22, 1902, denotes an exacerbation with free renal hemorrhage occurring during the course of a severe cold.

CASE No. 20.—J. T. I., male, 26 years of age; weight, 63 kilograms.

Operation: January 27, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Jan. 17, 1902. (before operation.)		1021		3.0%	strong reaction.	Large numbers mixed, epitheliated, granular, hyaline and epithelial; occasional blood cast. Occasional isolated blood and pus cells. Occasional granular and partly disintegrated renal element.
Jan. 22, 1902. (before operation.)		1018		1.8%	20% by bulk, Heller.	Numerous hyaline, granular, epitheliated, epithelial, mixed; occasional blood. Numerous isolated blood and pus cells. Occasional granular and disintegrated renal element.
Feb. 14, 1902.	1140 c. c.	1020	53.12 grams.	22.8 grams in 24 hours.	25% by bulk, Heller.	Many hyaline, granular and epithelial. A few blood cells and leucocytes. Some renal epithelium.
Nov. 22, 1902.		1016		2.0%	40% by bulk, Heller.	Large numbers all kinds, especially blood. Innumerable red blood cells (free hemorrhage, explaining excessive albumin content). Numerous granular and finely fatty renal epithelia. Occasional isolated pus cell.
July 2, 1903.	1050 c. c.	1023	56.27 grams.	29.4 grams in 24 hours.	0.525 grams in 24 hours.	Frequent hyaline and hyaline epitheliated. Fairly frequent granular. Rarely a composite and blood cast. Blood cells very numerous, isolated and in clumps of a dozen or more. Moderate number of leucocytes. Occasional renal cell.
Jan. 22, 1904.	1230 c. c.	1024	68.77 grams.	29.52 grams in 24 hours.	0.615 grams in 24 hours.	Rather frequent hyaline. Few granular and epitheliated. Many isolated red blood cells. Few leucocytes.

April 29, 1904.	1290 c. c.	1024	72.14 grams.	34.83 grams in 24 hours.	0.645 grams in 24 hours.	Fairly frequent hyaline, epi- theliated and fine granular. Occasional coarse granular. Occasional red cell. A few leucocytes.
July 20, 1904.	1650 c. c.	1016	61.51 grams.	21.45 grams in 24 hours.	marked trace.	Many hyaline, plain and epi- theliated; some partially finely granular. Many isolated red cells. A few leucocytes.

Result.—Decided improvement, with evidences of continued progress towards cure ever since operation. The character of the casts has improved and their number has diminished; albumin is decreasing and the daily output of solids and urea is more than sufficient. The tendency to renal hemorrhage has markedly decreased.

Case No. 21.

C. B., female, four and a half years of age (born July 28, 1897). Patient of Dr. A. Caillé, 753 Madison Avenue, New York, who has detailed the history of the case in the Archives of Pediatrics, 1902, xix., 734-738.

History prior to operation.—At the age of two years, patient contracted measles. Two weeks later she fell into a tub of scalding water and received very severe burns of the back and legs. About two weeks after that, swelling of feet and puffiness of face appeared, followed a little later by ascites. In continuation, I take the liberty of quoting from the history of the case as detailed by Dr. Caillé: "A well-known physician diagnosed the case as one of acute nephritis, from which she apparently recovered after four weeks. A similar attack, a month later, also ended in apparent recovery. On the occasion of a third attack, which was more severe, with suppression of urine of forty-five hours' duration, the child was admitted to the Babies' Ward of the New York Post Graduate Hospital, November 13, 1900. Her case was diagnosticated as subacute nephritis, and she was discharged, improved, December 30, 1900. On April 3, 1901, she was readmitted during my service, with all clinical evidence of chronic nephritis: Urine scanty and dark, containing albumin, all forms of casts and renal elements, blood and pus. Her eyes were puffy and her abdomen contained fluid. After a course of sweating,

dieting, the application of intestinal irrigation, and the administration of diuretics and diaphoretics, she went home improved. Nine months later, on February 1, 1902, I found her again an inmate of the Babies' Ward." The patient failed to respond to the usual measures and grew rapidly worse. Convinced of the futility of further medical treatment, Dr. Caillé asked me to decapsulate the kidneys.

Examination.—Again quoting Dr. Caillé: "She was generally œdematous, her heart was markedly enlarged, the apex beat being at the sixth interspace, an inch to the left of the nipple line. The heart sounds were clear, the second sound was accentuated."

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two and a half years.
- b) As known from urine examination, two and a half years.

Operation.—February 19, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Typical chronic parenchymatous nephritis, the large white kidney, on both sides. Again quoting Dr. Caillé: "Each kidney measured over ten centimeters in length, and was three times larger in bulk than normal."

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—No more œdema, headaches or uræmia after discharge from hospital. Color returned rapidly, and the patient, for a year past, has been the picture of perfect health, and has taken up her school life. Last report received in May, 1904, at which time the patient was in perfect health and the urine entirely free from albumin and casts.

Urine examinations were made in large number, at least thirty. In the subjoined table I have averaged eight urine examinations before operation, eight immediately after operation, and eight made between two and six weeks after operation. In addition, I have given all the urine examinations I have been able to make since patient left hospital. The comparison of the various examinations is certainly most instructive.

CASE No. 21.—C. B., female, four and a half years of age; weight, 23 kilograms.

Operation: February 19, 1902.

Date.	Amount of urine in 24 hours.	Spce. grav.	Total solids in 24 hours.	Total urea in 24 hours.	Albumin.	Renal casts.
Eight examinations before operation, Feb. 6-13, 1902.	495 c. c. to 840 c. c. average, 700 c. c.	1010 to 1022, average 1017.	average for 8 days, 27.0 grams daily.	average for 8 days, 8.5 grams daily.	average for 8 days, 0.103% daily.	Hyaline casts always. Granular and epitheliated generally. Few pus cells generally, and occasionally a red blood cell and renal element.
Eight examinations immediately after operation, Feb. 21-28, 1902.	330 c. c. to 750 c. c. average, 540 c. c.	1012 to 1029, average 1018.	average for 8 days, 21.56 grams daily.	average for 8 days, 9.288 grams daily.	average for 8 days, 0.1% daily.	Same casts as before, but for first few days much more abundant; also waxy, pus and occasional epitheliated casts. Blood and pus cells about same as before. Occasional renal cells.
Eight examinations made between March 1, 1902, and March 22, 1902.	510 c. c. to 1065 c. c. average, 750 c. c.	1009 to 1032, average 1021.	average for 8 days, 36.72 grams daily.	average for 8 days, 18.3 grams daily.	average for 8 days, 0.078% daily.	Large numbers granular casts, fewer hyaline. Nearly every report shows a few renal cells and pus cells.
May 20, 1902.	660 c. c.	1027	41.52 grams.	21.78 grams.	0.075%	Few leucocytes and renal epithelia.
Feb. 4, 1903.	1000 c. c.	1012	27.76 grams.	18.0 grams.	0.05%	No casts, no red and no white blood cells. Five to six small epithelial (renal?) cells.
Aug. 11, 1903.	1000 c. c.	1020	46.6 grams.	14.0 grams.	trace.	Rather frequent hyaline. Rarely an epitheliated hyaline. Rarely a red cell; occasional leucocytes.
Jan. 4, 1904.	1000 c. c.	1019	44.27 grams.	24.0 grams.	faint trace.	Very rarely a hyaline. Very rarely a red cell. Few leucocytes.
May, 1904.					none.	None.

Result.—A cure. Patient's health all that could be desired, and urine perfectly normal two years and three months after operation.

Case No. 22.

(Compare page 84.)

M. H., male, 36 years of age, physician, married.

Family history.—Father died at sixty-five, of chronic Bright's disease.

History prior to operation.—Albuminuria constantly for past three years, the albumin ranging in quantity from 0.125 per cent. to 5.0 per cent. Uræmic headaches, backache, coldness of extremities, pains in calves, high-tension pulse, violent cardiac action, keeping him awake at night, rapid loss of strength, dyspnœa, and a powdery feel of the skin have been the chief symptoms, forcing the doctor to give up practice for some months prior to our first acquaintance.

Examination.—Patient thin and cachectic looking; a very sick man. Marked hypertrophy of heart, with galloping rhythm; high-tension pulse. General arteriosclerosis. Right kidney readily palpable, slightly movable; left kidney in place.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, five years.
- b) As known from urine examination, three years.

Operation.—March 26, 1902, at the home of a friend.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney about normal in size. After removal of the thickened, rather firmly adherent capsule proper, the kidney surface everywhere presented the characteristic red and yellow mottling. Left kidney in identical condition with right.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—For the doctor's own opinion of the result of the operation performed upon his kidneys, consult page 84.

Immediately after operation the doctor returned to the exacting work of a very large practice. Steady gain in health followed until November, 1903, when he began to feel the strain of excessive and continuous hard work, and suffered some from insomnia and a tendency to catch cold. A vacation of a month, in March, 1904, remedied this state of things, and since then he has been at work again as hard as ever. He remains free from all his former uræmic symptoms, his headaches, backaches, and cardiac disturbances. Last seen, May 18, 1904. Color good. Heart normal. Fatigue from excessive work the only trouble. Urine appears to be steadily improving in character.

An interesting feature of this patient's history relates to the life insurance aspect of renal decapsulation. Two years before operation, an application for life insurance was turned down. In May, 1903, fourteen months after operation, the doctor applied for a policy to one of the three large life companies of New York, stating the facts of his long illness with chronic Bright's disease, of the decapsulation of his kidneys, and of his favorable progress since operation. His heart was found normal; the urine contained a trace of albumin and a few granular casts; 1,800 c. c. per day, with a specific gravity of 1.013. A conditional policy for \$5,000 was issued to him by the company. (Compare page 120.)

Urine examinations.—Records are in my possession of seven urine examinations, all of which are here presented.

CASE No. 22.—M. H., male, 36 years of age; weight, 48.5 kilograms.

Operation: March 26, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Aug. 23, 1901. (before operation.)	1680 c. c.	1008	31.315 grams.	23.52 grams in 24 hours.	2.125 grams in 24 hours.	Hyaline, hyaline epitheliated, and coarse granular. Renal epithelium and leucocytes.
April 21, 1902. (before operation.)	1740 c. c.	1011	44.6 grams	13.92 grams in 24 hours.	4.35 grams in 24 hours.	Few large granular, hyaline and epitheliated. Renal epithelium, blood cells and leucocytes.
March 24, 1902. (before operation.)		1012		1.4%	10% by bulk, Heller.	Numerous small and large hyaline, fine granular and mixed. Occasional leucocyte.
Feb. 21, 1903.	2160 c. c.	1015	77.49 grams.	30.24 grams in 24 hours.	marked ring.	Fairly frequent hyaline, some with partial granular change. Rarely a red cell and leucocyte.
July 14, 1903.	1800 c. c.	1012	50.33 grams.	25.2 grams in 24 hours.	0.9 grams in 24 hours.	Numerous hyaline. Occasional fine granular and epitheliated hyaline. Occasional red cell and leucocyte. Rarely a renal cell.
Jan. 13, 1904.	2400 c. c.	1013	72.7 grams.	40.8 grams in 24 hours.	marked trace.	Fairly frequent hyaline. Rarely an isolated red cell and leucocyte.
May 18, 1904.	1620 c. c.	1014	52.84 grams.	25.92 grams in 24 hours.	0.05 per cent.	Frequent hyaline. Few epitheliated and partially finely granular. Occasional red cell and leucocyte.

Result.—Exceedingly gratifying; almost a practical cure. Patient's general condition, excepting such symptoms as are due to physical and mental overwork beyond all reason, is all that could be desired, and the urine is almost normal. Especially gratifying are the secondary effects of the operation upon the heart. These changes for the better in the heart afford the clearest proof desirable of the improvement in the condition and the circulation of the kidneys.

Case No. 23.

I. K. S., female, 34 years of age, married. Patient of Dr. J. C. Sanders, Reading, Pa.

Family history.—Grandparents and several aunts and uncles died of consumption.

History prior to operation.—Albuminuria first discovered soon after birth of last child, March 7, 1899. Since then has had œdema of the feet and occasional puffiness of face and swelling of tongue. Great nervousness, uræmic headaches and photopsies. Retinitis albuminurica diagnosed, according to patient, by Dr. Rittenhouse, of Reading, Pa., in the summer of 1899. Her physician, Dr. J. C. Sanders, has examined the urine some fifty times during the past three months, and on only six or eight occasions found albumin and hyaline casts. Urine, however, always of low specific gravity, and scant, as little sometimes as one pint per diem. Urea always below one per cent. On these features Dr. S. made the diagnosis of chronic interstitial nephritis, and brought her to New York for decapsulation. Cough and violent heart thumping for past three months.

Examination.—A frail, nervous, little woman, pale and careworn. Lower extremities moderately œdematous. Fibroid infiltration at apex of right lung. Decided cardiac hypertrophy, with mitral regurgitant murmur. General arteriosclerosis. Right kidney movable three inches; left kidney in place.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, four years.
- b) As known from examination of urine, three years.

Operation.—April 4, 1902, at St. Francis Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney about two-thirds normal size; typical granular, contracted kidney. Capsule firmly adherent, a small piece of cortex coming away with capsule. Left kidney about three-fourths normal size; otherwise in same condition as right.

Diagnosis.—Right and left chronic interstitial nephritis. Separate examination of removed particles of kidney substance by Prof. H. T. Brooks and Dr. F. Schwyzer confirmed the diagnosis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Marked and steady improvement. I have seen the patient but once since operation, on February 21, 1903, when I made the following notes: "Color better. Heart hypertrophy somewhat less. Mitral murmur has disappeared. Patient states that Dr. Rittenhouse says that her eyes are now better than at any time during the past four years." She has resumed her duties in life, but still has a vast array of nervous symptoms to complain of, and is loath to admit improvement. Last report, June 27, 1904.

Urine examinations.—The condition of the urine, as studied by Dr. Sanders in some fifty examinations made during the three months preceding operation, has already been described. I have records of twenty-eight full quantitative as well as qualitative analyses, made since the day of operation. In the table is presented an abstract, which may prove interesting, of the twenty-four full examinations made, on as many days, immediately following operation. Other examinations, made at longer intervals, follow.

CASE No. 23.—I. K. S., female, 34 years of age; weight 37.5 kilograms.
Operation: April 4, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Total urea in 24 hours.	Albumin.	Renal casts.
Average of 24 examinations, April 4-27, 1902.	990 c. c.	1015	35.75 grams.	8.91 grams.	0.323 grams in 24 hours.	See three records next following.
Daily average, April 4-11, 1902.	670 c. c.	1020	32.39 grams.	5.37 grams.	0.49 grams in 24 hours.	Hyaline and granular, every day.

Daily average, April 12-19, 1902.	900 c. c.	1012	25.43 grams.	10.12 grams.	0.44 grams in 24 hours.	Hyaline and granular, on four days; hyaline alone on one day; granular alone on one day; no casts on two days.
Daily average, April 20-27, 1902.	1400 c. c.	1013	44.44 grams.	11.25 grams.	0.04 grams in 24 hours. On five days no albumin.	Few granular on two days; no casts on six days.
Jan. 21, 1903.	840 c. c.	1010	20.05 grams.	11.34 grams.	extremely faint trace.	Occasional hyaline, mostly of small calibre. One granular. Occasional leucocyte.
Sept. 23, 1903.	720 c. c.	1010	15.43 grams.	9.36 grams.	minute trace.	Rarely a small hyaline.
Jan. 16, 1904.	1000 c. c.	1018	41.94 grams.	14.0 grams.	trace.	Occasional hyaline.
Jan. 24, 1904.	2000 c. c.	1011	51.26 grams.	24.0 grams.	trace.	Occasional hyaline.
June 27, 1904.	1350 c. c.	1015	47.18 grams.	22.95 grams.	trace.	None.

Result.—A practical cure, the urine being practically normal, and the patient's general health, with the exception of the nervous system, corresponding thereto. A trace of albumin in a twenty-four hours' specimen from a woman, and an occasional hyaline cast, mean nothing when taken in connection with a daily output of solids and of urea above the normal for her weight.

Case No. 24.

A. W. B., male, 23 years of age, single. Patient of Dr. L. B. McBrayer, Asheville, N. C.

Family history not especially relevant.

History prior to operation.—Pneumonia at age of twelve. In October, 1901, slight frequency of urination, with voiding of large quantities of urine, 2,500 c. c. to 3,000 c. c. per day. Suddenly stricken with almost complete blindness on December 21, 1901, when examination of the eyes and urine revealed chronic Bright's disease as the cause. Albumin and casts at every urine examination since. For past two months violent cardiac palpitation and extreme dyspnoea. Patient reached New York on April 7, 1901, so blind that he could not find his way about in broad daylight.

Examination.—Thin, cachectic-looking patient, profoundly uræmic, and so blind from retinitis albuminurica that he is

unable to see me as I stand before him. Feet swollen. Enormous enlargement of the heart, with tumultuous action, and mitral regurgitation. Urine examination: Daily quantity, 1,080 c. c.; specific gravity, 1,009; total daily solids, 22.65 grams; urea, 5.1 grams per diem; albumin, 3.1 grams per diem; casts of all kinds, except pus and waxy.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year.
- b) As known from urine examination, four months.

Operation.—April 11, 1902, at St. Francis Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys very hard and contracted to one-half the normal size by interstitial inflammation. Typical granular appearance of renal surfaces after removal of capsules.

Diagnosis.—Right and left chronic interstitial nephritis.

Wound healing primary on both sides.

History after operation.—No change for the better at any time. The uræmia gradually deepened, and severe epistaxis, requiring repeated plugging of the anterior and posterior nares, supervened on April 18. Patient died on April 19, eight days after operation, of exhaustion and uræmic coma.

Urine examinations.—Ten in all were made. They were almost exact duplicates of the one given under head of examination. There was no material change in the eight days the patient lived after operation.

Result.—Death from uræmia eight days after operation. The uræmia existed at time of operation, and was not relieved by latter.

Case No. 25.

H. E. A., male, 29 years of age, married. Patient of Dr. D. C. Loewenthal, 157 Henry Street, New York, and Dr. R. M. Curts, 30 Church Street, Paterson, N. J.

Family history.—Father died of pneumonia; mother died of stomach trouble. No Bright's disease in family.

History prior to operation.—With exception of moderate backaches, well until a year ago. Then constant frightful headaches led him to consult a physician, who, on March 7,

1901, pronounced it a case of chronic Bright's disease. Headaches, backaches in lower dorsal region, occasional puffiness of eyelids, and loss of strength the only symptoms. Frequent examinations of urine have always shown albumin and casts.

Examination.—Small, slight man, weighing fifty-three kilograms; height, 1.57 meters. Pale face. No œdema at present. Moderate hypertrophy of heart; no murmur. Decided arteriosclerosis; high-tension pulse. Neither kidney palpable.

Existence of chronic Bright's disease before operation:

- a) As indicated by symptoms, about two years.
- b) As known from urine examination, one year.

Operation.—April 15, 1902, at St. Francis Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys in identical condition, shriveled and contracted to two-thirds the normal size. Capsule thickened and very adherent. Typical granular kidney after removal of capsule.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Patient did unusually well, as may be judged from the following notes, made on the occasion of a visit at my office, on December 6, 1903: "Went to work immediately after leaving hospital, and has not missed a day since. Is feeling perfectly well, and has gained two and a half kilograms in weight. Backaches entirely gone, but is especially delighted at the entire disappearance of his former severe uræmic headaches, which were with him constantly for a year prior to operation. Has had only two headaches in all since operation. Heart regular, and its action decidedly improved. Pulse of nearly normal character. Color good." Remains well at date of last report, May 21, 1904.

Urine examinations.—Records of twenty-nine examinations are in my possession. For about a year after operation there was little or no change in the urinary findings, although the patient was abundantly satisfied, and with good reason, at the great change for the better in his general condition. Since May, 1903, the albumin has diminished to a marked trace, as compared with a daily loss of two grams before operation. The total solids have increased from 30.76 grams before operation,

to 44.7 grams, and the daily urea output, which was as low as four grams before operation, was 18.15 grams in May, 1903, and 21.12 grams in May, 1904. All the worst forms of casts have permanently disappeared from the urine.

CASE No. 25.—H. E. A., male, 29 years of age; weight, 55 kilograms.

Operation: April 15, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
April 14, 1902. (before operation.)	1200 c. c.	1011	30.76 grams	4.0 grams in 24 hours.	2.0 grams in 24 hours.	Innumerable hyaline and granular, large and small; occasional epithelial and fatty. Occasional blood and pus cells and granular renal epithelia.
March 10, 1902.		1009		1.0%	10% by bulk, Heller.	Innumerable small hyaline, fine granular, and epitheliated; occasional fine fatty. Occasional isolated blood and pus cells. Occasional granular renal epithelium. "Chronic nephritis with acute irritation."—Prof. H. T. Brooks.
June 13, 1902		1008		0.5%	10% by bulk, Heller.	Large numbers large and small hyaline, epitheliated and mixed. Rarely an isolated blood cell. Occasional isolated leucocyte. Occasional fatty and fine granular renal element.
Dec. 29, 1902.		1010		1.1%	20% by bulk, Heller.	Innumerable, all kinds, both large and small; chiefly the former variety. Rarely an isolated blood and pus cell. Numerous granular and finely fatty renal epithelia.
May 5, 1903.	1650 c. c.	1012	36.14 grams.	18.15 grams in 24 hours.	marked ring.	Very numerous hyaline, fine granular and epitheliated. Rarely a waxy cast. Rarely a red cell. Few pus cells. Occasional renal epithelium.
Dec. 7, 1903.	1800 c. c.	1010	41.7 grams.	14.4 grams in 24 hours.	marked trace.	Rather frequent hyaline, some of them epitheliated, some finely granular, and some partially covered with urates. Rarely an isolated blood cell. Occasional leucocyte.
May 21, 1904.	1920 c. c.	1010	44.74 grams.	21.12 grams in 24 hours.	marked trace.	Frequent hyaline and fine granular. Moderately frequent coarse granular, some partially fatty, a few with red cells and leucocytes adhering. Frequent isolated red cells. A few leucocytes. Occasional renal cells, some showing fatty degeneration. This specimen represents, probably, one of the exacerbations frequently noted.

Result.—The general condition and the urine examinations of this patient, as commented on above, denote a decided improvement, amounting almost to a practical cure. I prefer, however, to class him as greatly improved, for the present, and hope that in a year or so I may be able to report the case as one of cure.

Case No. 26.

M. H., female, 36 years of age, married. Patient of Dr. Henry Ruhl, 842 East 164th Street, New York.

Family history.—Father alive and well at 68. Mother died in childbed, at age of 30. One brother and one sister died in infancy. Three brothers and sisters living and well.

History prior to operation.—Always markedly anæmic. Periods first appeared late in life, at age of twenty. From twenty to twenty-four years of age there was almost constant œdema of face, arms and legs. The anæmia and marked pallor continued to date, accompanied during the past seven or eight years by indigestion, catarrh of the bowels, rapidly increasing nervousness, and much violent action of the heart. Albuminuria first discovered six months ago.

Examination.—Extremely pale and translucent complexion. She looked practically exsanguinated. Heart hypertrophied, and acting very rapidly and powerfully; high-tension pulse. Right kidney movable fifteen centimeters; left kidney movable ten centimeters. Chronic appendicitis, and various pelvic lesions, the results of childbirth.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, sixteen years.
- b) As known from urine examination, six months.

Operation.—April 16, 1902, at Post Graduate Hospital.

Decapsulation and fixation of both kidneys; excision of appendix through right lumbar wound.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Chronic perinephritis and thickening of capsule proper on both sides. Right kidney slightly large, hard, lobulated, mottled in two shades of red, after stripping off capsule. Left kidney slightly large, hard, lobulated, and polycystic. Some thirty to forty small cysts, of average size of a pea, scattered throughout kidney. A piece

of kidney tissue removed for examination. Professor Brooks pronounced it "chronic diffuse nephritis, with parenchymatous changes predominating."

Diagnosis.—Right and left chronic diffuse nephritis, confirmed by microscopical examination of a piece of kidney tissue removed at operation.

Convalescence disturbed by leakage of urine into depths of right wound, necessitating reopening and drainage. Left wound healed by first intention.

History after operation.—The pelvic conditions necessitated a second series of operations, which were performed, again under nitrous oxide and ether anæsthesia, on May 19, 1902. The recovery of the patient was slow but sure, with but one or two interruptions due to slight exacerbations of chronic nephritis. One by one the old symptoms of many years' standing disappeared, confidence in herself returned to the patient, her color improved, and when last seen, January 10, 1904, she looked and felt well, and had nothing special to complain of. The urine became practically normal in about eight months after operation, and has so remained. Last report, May 19, 1904, confirms permanence of good health.

Urine examinations were made to the number of 35.

CASE No. 26.—M. H., female, 36 years of age; weight, 52.5 kilograms.

Operation: April 16, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
April 17, 1902.	960 c. c.	1019	42.5 grams.	24.0 grams in 24 hours.	marked trace.	Hyaline, granular and epithelial, all in good numbers. A few renal cells.
June 18, 1902.	2430 c. c.	1010	56.62 grams.	21.87 grams in 24 hours.	marked trace.	Hyaline and granular, fairly frequent.
Sept. 20, 1902.		1008		0.8%	5% by bulk, Heller.	Occasional small hyaline and fine granular. Rarely an epitheliated.
Jan. 24, 1903.	2700 c. c.	1010	62.91 grams.	32.4 grams in 24 hours.	very minute trace.	One small hyaline found.
June 30, 1903.		1011		1.5%	none.	Rarely a hyaline.

Jan. 6, 1904.	2400 c. c.	1011	61.51 grams.	40.8 grams in 24 hours.	none.	Rarely a hyaline.
May 19, 1904.	1830 c. c.	1016	68.22 grams.	27.45 grams in 24 hours.	none.	None.

Result.—A practical cure. Patient well, and urine normal, more than two years after operation.

Case No. 27.

(Compare page 73.)

V. M., male, 21 years of age, single. Patient of Drs. A. P. Dodge and B. L. Dunn, Oneida, N. Y.

Family history.—General dropsy appeared in December, 1900, and was the first symptom. Albuminuria and casts at all examinations since. Spent the entire winter of 1900-1 in bed. Retinitis albuminurica developed in both eyes in December, 1901: mixed œdema, hemorrhage and exudate.

Examination.—Patient of good physique, with characteristic pallor of advanced chronic Bright's disease. High-tension pulse. Vision reduced to 1/200 in either eye as a result of retinitis albuminurica. Heart greatly hypertrophied; stenosis of aortic orifice. Neither kidney distinctly palpable. For condition of urine, *vide* urine examinations.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, sixteen months.

Operation.—April 16, 1902, at St. Francis Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys three-fourths the normal size, indurated. Surface of kidneys even, smooth, glossy, and mottled dark and light red.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History after operation.—Immediate, wonderful and rapid improvement in both eyesight and general condition, lasting for about seven months after operation. On July 16, 1902, three months after operation, Dr. Dunn writes: "I am very gratified to be able to report to you the extraordinary improvement

in the eye condition of Mr. M., whom you operated on April 16 of this year. Directly before the operation his Vision was: right eye = $1/200$; left eye = $1/200$; reading vision negative. At present, right eye, $V = 15/200$; left eye, $V = 20/120$; reading = J. 6. His diet and treatment have been the same since the operation as before, yet he is now gaining vision as fast as he was losing it before. Dr. Dodge reports great improvement in Mr. M.'s general condition; he is now able to do light work, and is much stronger in every way."

The improvement lasted until November, 1902, when an attack of right pleurisy supervened. 3,000 c. c. of fluid were drawn from the right chest, but the patient never fully rallied. On December 25, 1902, uræmic symptoms developed. Uræmic coma and epistaxis closed the scene on January 18, 1903, nine months after operation.

Urine examinations were made to the number of 25. On the day before operation 1,000 c. c. of urine were passed, containing 41.94 grams solid constituents, five grams of urea, two grams of albumin, hyaline, granular, epithelial and waxy casts, and renal elements in abundance. Two weeks after operation he excreted 76.8 grams of solids and 32 grams of urea in one day; and again, two weeks later, on the day prior to his departure from hospital for home, 61.96 grams of solids and 44.6 grams of urea.

Result.—Very great improvement lasting seven months after operation. Death from uræmia on January 18, 1903, nine months after operation.

Case No. 28.

L. G. B., male, 24 years of age, single. Patient of Dr. A. H. Fridenberg, 64 East 65th Street, New York.

Family history not pertinent.

History prior to operation.—Well up to two years ago. Since then vesical irritation, epigastric distress, much vomiting, indigestion, bloating, palpitation of heart and severe headaches. Albumin and casts discovered in urine a year ago, and at every examination since.

Examination.—Patient pale and anæmic. Heart enlarged; systolic murmur, most intense over base; high-tension pulse. Right kidney movable eight centimeters; left kidney palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, one year.

Operation.—April 21, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys larger and softer than normal. On removal of the thin capsule the surfaces presented the characteristic appearances of the large, white kidney. Microscopical examination by Prof. H. T. Brooks of a small piece of tissue removed from the right kidney showed "the histologic features of diffuse nephritis, with parenchymatous changes most prominent."

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds, after evacuating a slight leakage of urine into depths of left wound.

History after operation.—A degree of improvement followed operation. On October 11, 1902, the patient reported feeling bright and easy in a general way; stomach disturbances and headaches, however, were still very troublesome. I did not see patient again, but learned that he died on April 19, 1903, one year after operation, probably of uræmia.

Urine examinations were made to the number of some 25. On April 11, 1902, ten days before operation: specific gravity 1.009; 20 per cent., by bulk, of albumin; one per cent. of urea; innumerable casts of all kinds; occasional isolated blood and pus cells; numerous granular renal elements. There was practically no change for five months after operation. Improvement then began, and an examination made February 3, 1903, shows 10 per cent. of albumin; 1.1 per cent. of urea; rarely a hyaline cast; no blood, and but few pus cells. This is the last examination of which I have a record.

Result.—Slight transient improvement in general health and in condition of urine. Death on April 19, 1903, one year after operation, probably from uræmia. There was urinary infection in this case before operation, which never entirely disappeared, and which may have had something to do with the final fatal issue.

Case No. 29.

(Compare page 73.)

A. J., male, 34 years of age, married. Patient of Dr. B. R. Morrow, 207 Second Avenue, New York.

Family history not pertinent.

History prior to operation.—The existence of chronic Bright's disease known for past five years, during which he has suffered from general œdema, profound cardiac derangement, bronchorrhœa, pulmonary hemorrhages, intense dyspnoea, digestive disturbances and uræmic headaches and muscular pains.

Examination.—Profound yellowish pallor and air hunger of final stages of Bright's disease. General hyperæmia of bronchial mucous membrane, with cough and expectoration of blood; enormous hypertrophy of the heart, with beginning dilatation; high-tension, dicrotic pulse; profound uræmia. Kidneys not palpable. Operation not advised, but undertaken at patient's earnest pleading.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, seven years.
- b) As known from urine examination, five years.

Operation.—April 21, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidneys at operation.—Both kidneys almost fibrous, and shrunken to one-half the normal size from interstitial inflammation. Surfaces of kidney granular everywhere, after removal of capsule.

Diagnosis.—Right and left chronic interstitial nephritis.

History after operation.—Patient became more and more profoundly uræmic, and died in uræmic coma on April 24, 1902, sixty-four hours after operation. Only 300 c. c. of urine were voided on each of the last two days of life.

Urine examination.—The only urine examination, made one week before operation, shows albumin in moderate amount; specific gravity, 1.009; urea, 1.0 per cent.; innumerable large granular, epithelial, pus and mixed casts; occasional waxy casts; numerous isolated blood and pus cells; large numbers of granular and fine fatty renal elements.

Result.—Death on April 24, 1902, sixty-four hours after operation, from unrelieved uræmia.

Case No. 30.

C. L., male, 26 years of age, single. Patient of Dr. J. T. Ireys, Lakeside, San Diego Co., California.

Family history good.

History prior to operation.—Patient considered himself well until the early part of 1897. The symptoms then noticed were weakness, brick-dust sediment in urine, and one severe attack of headache and vomiting. An examination of the urine, on July 13, 1897, showed the presence of chronic Bright's disease. Frequently repeated urine examinations, made at various times during the past five years, always showed albumin and casts. There was marked œdema of the feet for three months in 1898; only occasional and very slight œdema since. Patient is subject to migraine, but, apart from this and the symptoms above noted, there were few or no indications of poor health.

Examination, April 10, 1902. Patient's muscular condition and color good, owing to almost constant out-door life in the South, from which he has just returned. Heart, arteries, and fundus of the eye, normal. Slight œdema of feet. Examination of urine shows chronic nephritis with infection (*vide* uranalysis, April 25, 1902). Bacteriological cultures, made later on from an aseptically drawn specimen of urine, showed the infecting agents to be the *staphylococcus albus* and the *bacterium coli commune*.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, five years.
- b) As known from urine examination, four years and ten months.

First operation, May 1, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidneys at operation.—The right kidney was found contracted to about three-fourths the normal volume, irregular in outline, deformed and very hard. The capsule proper appeared slightly and unevenly thickened, but otherwise normal; it was readily detached from the kidney over the entire surface of the latter. The raw kidney surface pre-

sented everywhere the typical granular appearance of advanced chronic interstitial nephritis. The left kidney was contracted to about two-thirds the normal volume; otherwise it was in the same condition as the right kidney. The capsules were completely stripped from both kidneys and cut away.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—Soon after the operation the patient started on a tour of pleasure around the world. The last examination of urine prior to sailing, made June 23, 1902, showed no improvement over the specimen examined before operation; if anything, the renal infection appeared more active. The patient, however, felt perfectly well and had nothing especial to complain of. I did not see him again for more than a year and a half, nor was it possible during that time to obtain a specimen of urine for examination.

On January 10, 1904, the patient reappeared in New York and gave the following account of himself: For about six months following operation he appeared to be doing very well. In December, 1902, he was laid up in Japan for a week with acute suppurative pyelonephritis. A month later he passed through a similar experience in Calcutta, the second attack lasting ten days. After that the condition of his health was subject to slight fluctuations due to several minor exacerbations of the renal infection. On November 29, 1903, during a sojourn at a Southern health resort, a severe attack of acute infection, or rather of acute exacerbation of the chronic infection developed. The attack was characterized by high fever, much headache, inflammatory swelling of the right epididymis, and the discharge of large quantities of pus with the urine. On several occasions the patient, as he expressed it, "passed three to four teaspoonfuls of pus in a solid bunch." The attack lasted for nearly a month, with varying intensity. After its termination the patient, by my advice, came North for treatment of the persistent urinary infection.

Cystoscopic examination, made January 10, 1904, showed inflammation of the prostatic urethra and of the trigonum vesicæ, with puffiness and hyperæmia of the mouths of both ureters, the mucosa of the bladder elsewhere being normal.

A nearly healed prostatic abscess was still discharging small quantities of pus into the urethra. Urine examinations during January and February, (*vide* table) showed unmistakable renal infection. Bacteriological culture of an aseptically drawn specimen of urine demonstrated the infecting agents to be the *staphylococcus albus* and *bacterium coli commune*.

The urinary infection was treated by the internal exhibition of urotropin in large and cumulative doses, and by vesical irrigations and deep urethral applications of a silver preparation. The cystitis and deep urethritis were soon brought under control, but the renal infection persisted. There was, however, at no time after the treatment was begun, any rise of temperature or other indication of exacerbation of the chronic infection.

Increasing anæmia and deepening uræmia were the alarming features of the case during this period. A blood examination made January 13, 1904, gave: Erythrocytes, 3,678,000; leucocytes, 8,853; hemoglobin, 80 per cent. A second count, made February 5, 1904, yielded: Erythrocytes, 3,533,000; leucocytes, 10,113; hemoglobin, 60 per cent. The fluctuations in the daily output of urea may be seen from the appended table of urine examinations.

After the vesical and urethral infection was removed there appeared to be no immediate further indications for surgical treatment, and I requested my friend, Prof. A. Caillé, to take charge of the case. For the last two months of his life the patient was constantly under Dr. Caillé's care and observation. Early in February frightful uræmic headaches and an extensive uræmic infarction of the right lung with considerable hemorrhage developed, and Dr. Caillé advised a redencapsulation of the kidneys, with a view to increasing the urea output. The advice was declined, and for nearly two months more the patient went on from bad to worse, the atrocious uræmic headaches being almost constant in character. On March 30 uræmic convulsions supervened, followed by continuous coma and great swelling and discoloration of the face. On this day, also, complete suppression of urine occurred, the bladder being repeatedly catheterized and always found empty. On March 31 the patient was in a moribund condition, permanently unconscious, and frequently in convulsions, not a drop of urine

having been secreted by the kidneys for more than thirty hours. Sweating, free purging, colon flushings, and other therapeutic resources, including a venesection with the abstraction of over 500 c.c. of blood from the arm, had proved powerless to control the uræmic crisis or to start the action of the kidneys. At this stage of the case, with the end but a few hours away, I was requested by Professor Caillé to assume again charge of the case and to perform a second decapsulation of the kidneys as a final resort and forlorn hope. In view of the proven potency of renal decapsulation in relieving suppression of urine and increasing the urea output when all other measures had failed, I declared myself ready to operate upon this desperate case. The patient was brought to my private hospital, and within an hour after his arrival the operation was begun.

The patient was carried to the operating room unconscious, livid, and with beginning œdema of the lungs, the heart's action, however, still being fairly good. A catheter was passed and the bladder was found empty.

Second operation, March 31, 1904, at my private hospital.

Redecapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at second operation.—An incision was carried on the right side through the scar of the first operation and the kidney was exposed. The fatty capsule completely covered the kidney, being adherent posteriorly to the scar of the former operation and anteriorly to the kidney. The kidney was thus indirectly and mediately anchored to the walls of the abdomen in the lumbar region. After detaching the fatty capsule the kidney was found covered by a newly formed capsule proper, not differing greatly in appearance from the capsule removed at the first operation. The new capsule was thinner and perhaps more transparent than the original capsule, which, it will be recalled, was slightly and unevenly thickened. It was peeled off from the entire surface of the kidney and cut away with no greater difficulty than obtained in the case of the original capsule. There was not the slightest evidence of compression of the kidney by the new capsule. The perirenal fat was found well vascularized, though the entire operation, including the separation of the

capsule from the kidney, was practically bloodless, owing possibly to the liberal venesection of the previous day. The kidney itself was found of exactly the size and volume encountered at the first operation two years previously. It presented also the same characteristic gross appearance of chronic interstitial nephritis. It was, however, decidedly less hard and more succulent to palpation than at the first operation. The left kidney was next operated upon, the description above given of the operation on the right kidney holding good also for the operation on the left urinary gland. The left kidney was found in identical condition as regards size and gross appearances with that found at the first operation; it likewise was distinctly more succulent and less fibrous than at the first operation two years before.

Urine examinations were made during the progress of the case to the number of more than thirty. The appended table contains a selection from those made by Prof. H. T. Brooks or Dr. W. G. Vincent. They show little or no practical improvement, the change for the better otherwise to be expected after renal decapsulation being neutralized by the persistent urinary infection.

CASE No. 30.—C. L., male, 26 years of age; weight, 60 kilograms.

Decapsulation of both kidneys: May 1, 1902.

Redecapsulation of both kidneys: March 31, 1904.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Apr. 25, 1902. (before operation.)		1012		1.5%	30% by bulk, Heller.	Large numbers small hyaline, granular, epithelial and mixed casts. Occasional granular and fatty renal element. Large numbers isolated pus cells.
June 23, 1902.		1014		1.7%	30% by bulk, Heller.	Innumerable casts of all kinds except waxy. Occasional granular and disintegrated renal cell. Occasional isolated blood cell. Innumerable pus cells, isolated and in masses.
Jan. 21, 1904.	2800 c. c.	1011	74.56 grams.	14 grams in 24 hours.	25% by bulk, Heller.	Numerous large hyaline, fine granular, epithelial and mixed; occasional pus cast. Occasional isolated red blood cell. Innumerable isolated pus cells, often in small masses resembling fragments of pus casts. Numerous renal cells, occasionally finely fatty.

Jan. 27, 1904.	3800 c. c.	1007	61.798 grams.	19 grams in 24 hours.	30% by bulk, Heller.	Occasional very large hyaline and pus; also mixed and finely fatty. Innumerable pus cells, often in small masses. Considerable number renal elements, occasionally very gran- ular.
Feb. 5, 1904.	4000 c. c.	1008	74.56 grams.	16 grams in 24 hours.	33% by bulk, Heller.	Rarely a large hyaline and epithelial and pus. Numerous pus cells, isolated and in masses resembling frag- ments of pus casts. Large number of granular renal elements.
Feb. 14, 1904.	2000 c. c.	1010	46.6 grams.	10 grams in 24 hours.	0.8%	Frequent hyaline. Rather frequent coarse granu- lar. Few epithelial. Many isolated red cells. Numerous pus cells, singly and in masses.
Feb. 20, 1904.	1700 c. c.	1012	47.53 grams.	13.6 grams in 24 hours.	heavy ring.	Many hyaline. Occasional granular. Few mucous threads. Many red cells and many pus cells.
March 7, 1904.	1200 c. c.	1012	33.55 grams.	18 grams in 24 hours.	marked ring.	Few hyaline. Rarely a fine granular. Few isolated red cells. Quite frequent pus cells, singly and in small masses.

Result.—On completion of the operation the patient was returned to bed in about the same condition in which he came to the operating table. The uræmia remained uninfluenced, and five hours after operation the patient died in uræmic coma. The flow of urine, however,—and this is a matter of considerable practical interest—was started by the operation, although too late to be of any avail in saving life. During the last three hours of life the patient unconsciously voided into bed considerable quantities of urine, the exact amount of which could not be determined.

Three points of interest stand out in the history of the case narrated: (1) The nullification of the usual good effects of renal decapsulation by persistent chronic infection of the genito-urinary tract. Notwithstanding this, it remains an interesting speculation as to what the outcome of renal rede-capsulation would have been if performed two months earlier, when first advised by Dr. Caillé. (2) The mediate and practically normal fixation of both kidneys as a result of simply dropping the kidneys back into their fatty beds after decapsulation. (3) The prompt effect of decapsulation in relieving complete anuria.

Case No. 31.

C. A. F., female, 43 years of age, married. Patient of Dr. T. P. Whaley, 113 Wentworth Street, Charleston, S. C., and Dr. J. W. Putnam, 525 Delaware Avenue, Buffalo, N. Y.

Family history.—Father alive at 82. Mother died at 63, and one sister at 24 years of age.

History prior to operation.—Patient suffered for many years with dyspeptic symptoms, extreme nervousness, and general ill health. For the past three years, uræmic headaches and dropsy of the extremities, in addition. Chronic Bright's disease recognized and treated during the past three years. During the winter of 1901-2, patient lived in the South for her health. Toward the end of April, 1902, weakness became so extreme, and uræmic symptoms so pronounced that death seemed very near at hand, and Dr. T. P. Whaley brought her from Charleston, S. C., to New York for immediate operation as, in his opinion, affording the only chance of averting impending death. It was only by the free use of various stimulants hypodermatically that she was able to reach New York, on May 1, 1902, in a condition of extreme exhaustion bordering on collapse.

Examination.—Patient a pale, thin woman, weighing only 45.5 kilograms. Face puffy; feet slightly œdematous. Heart's action very feeble and rapid; no murmur. Decided arteriosclerosis. Right kidney movable ten centimeters; left kidney in place.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, four to five years.
- b) As known from urine examination, three years.

Operation.—May 2, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys, with fixation of right kidney.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Chronic perinephritis, with induration of fatty capsule, and with thickening of proper capsules on both sides. Capsules separated from kidneys with some difficulty, exposing a beef-red, granular surface over the entire extent of both organs. Right kidney about three-fourths and left about seven-eighths the normal size. A piece of tissue removed from each kidney for microscopic examination.

Diagnosis.—Right and left chronic diffuse nephritis, far advanced. Prof. H. T. Brooks' report, confirming the diagnosis, reads: "Microscopic examination of the kidney tissue from right and left kidneys of Mrs. C. A. F. showed marked changes corresponding to chronic diffuse nephritis. There is most pronounced change in the interstitial tissue and glomeruli, the latter in many instances having undergone fibrosis and hyaline degeneration. The alterations are of about equal intensity in both kidneys, so far as the fragments examined are concerned."

Convalescence uneventful. Primary healing of both wounds.

History since operation.—Patient rallied unexpectedly well after operation, and in four weeks left for her home in Buffalo, N. Y. The history of the nearly two years elapsed since operation represents a series of ups and downs, the patient gaining steadily on her old symptoms, but having a number of setbacks from intercurrent diseases, the last of them a severe attack of the grippe. Notwithstanding all this, she wrote me on March 9, 1904, that during the first year after operation she was decidedly better than during the year preceding, while during the second year after operation she has, thus far, again gained upon the first.

The patient died very suddenly and unexpectedly on April 22, 1904, two years after operation. Regarding the mode of death I have two letters, one from her husband, and one from Dr. J. W. Putnam, who has attended the patient ever since her operation.

Her husband writes: "My wife died on April 22, 1904, somewhat suddenly, after a drive around the park here for an hour, before, during, and for an hour or so after which she said she was feeling better than for a year. She had a hemorrhage of the brain, one side becoming paralyzed while dressing for dinner."

Dr. Putnam writes: "Mrs. F. died very suddenly, after having had a quiet, uneventful day in her usual good health. I had not seen her professionally in two months. My last prescription was for an attack of indigestion. Cerebral hemorrhage was the cause of death, so far as I know. No one was there when she died; the death was sudden. There was no autopsy."

Urine examinations were made to the number of some twenty.

CASE No. 31.—C. A. F., female, 43 years of age; weight, 45 kilograms.

Operation: May 2, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
May 1, 1902. (before operation.)	1000 c. c.	1011	25.63 grams.	15.0 grams in 24 hours.	marked trace.	Large numbers hyaline. Moderate number granular, epithelial and fatty. Occasional granular renal element and pus cell.
Sept. 10, 1902.		1005		0.6%	15% by bulk, Heller.	Numerous small hyaline, fine granular and finely fatty; occasional epitheliated. Occasional pus cell.
Jan. 29, 1903.	2250 c. c.	1010	52.43 grams.	13.5 grams in 24 hours.	1.125 grams in 24 hours.	Numerous hyaline. One hyaline epitheliated.
June 24, 1903.		1008		0.5%	trace.	Frequent hyaline.
Jan. 26, 1904.	2250 c. c.	1006	31.455 grams.	4.5 grams in 24 hours.	trace.	Rather frequent hyaline. Occasional epitheliated hyaline. Many mucous cylindroids. Patient just over a long and severe attack of grippe.

Result.—Sudden and unexpected death from cerebral hemorrhage, two years after operation. Notwithstanding this, the result, all things considered, may be regarded as satisfactory. Impending death was averted by the operation, and a lease of life for two years—two years, moreover, of better health than before operation—was gained.

Case No. 32.

(Compare page 74.)

E. S. W., male, 22 years of age, single. Patient of Dr. W. A. Goodall, 565 East 158th Street, New York City.

Family history unimportant.

History prior to operation.—Scarlet fever five years ago, followed by nephritis. Served in the Spanish-American war of 1898, and suffered much from exposure during the campaign. Since then his health has never been good, uræmic symptoms and dropsy being the chief complaints. Seven

weeks ago he was taken to a general hospital for treatment, but grew rapidly worse, so that his abdomen required tapping five times during the past four weeks. Finally the physician and surgeon in attendance advised decapsulation, but declined to undertake the operation themselves, advising the patient to request me to perform it. On Dr. Goodall's request I consented to operate, and on May 1, 1902, the patient was transferred in an ambulance from the hospital where he was staying to St. Francis' Hospital.

Examination.—Enormous general dropsy and ascites existed, the latter requiring a new tapping of the abdomen on the morning of operation. Face so swollen that the eyes were almost closed. Both pleural cavities filled with fluid. Heart's action weak and feeble; no murmurs. The patient's desperate condition brooked no delay, and operation was performed on the day after admission.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, five years.
- b) As known from urine examination, four years.

Operation.—May 2, 1902, at St. Francis' Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Excessive œdema of tissues of back and of perirenal fat. Both kidneys, enlarged to nearly twice their normal size, presented exquisite examples in every particular of the large, white kidney.

Diagnosis.—Right and left chronic parenchymatous nephritis.

History after operation.—Patient seemed to be doing well when, on May 5, an acute fibrinous pneumonia involving the left upper lobe developed, to which the patient succumbed on May 8, at 10 p. m., a little over six days after operation.

Urine examinations.—Six were made on six different days. The daily quantity never exceeded 540 c. c., the specific gravity varying between 1,022 and 1,030. Daily amount of urea, four to seven grams; of albumin, two to nine grams. Casts of all kinds in the greatest abundance were found at every examination.

Result.—Death from pneumonia, a little over six days after operation.

Case No. 33.

L. D., male, aged 20 years, single. Patient of Dr. Leonard Weber, 25 West Forty-sixth Street, New York.

Family history.—Mother, father, three brothers and one sister living and in good health. Two brothers and one sister died in infancy.

History prior to operation.—Had a severe attack of scarlet fever at eight years of age. At age of ten years, an acute bronchial catarrh and acute nephritis were diagnosticated by Dr. Weber. For the past five years has had many uræmic attacks, generally of a mild character, until one year ago when he had a very bad attack, with severe convulsions, profound coma, general anasarca and ascites. This attack lasted two months, and was succeeded by a number of milder attacks at frequent intervals to date. Dropsy, moderate backaches, severe headaches and extreme weakness are the chief complaints.

Examination.—Patient extremely anæmic and slightly œdematous everywhere. Characteristic pallor of chronic Bright's very pronounced. Extreme dyspnœa, the characteristic air hunger of the final stages of chronic Bright's. Marked cardiac hypertrophy, with tumultuous action of heart. Systolic bruit over apex and base, the latter probably anæmic in character.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, twelve years.
- b) As known from examination of urine, ten years.

Operation, May 12, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Each kidney about twice the normal size. Capsules easily separated. Surfaces of both kidneys white, with faintly yellow mottling. Kidneys fatty to pressure touch. Typical large, white kidneys.

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Three months after operation patient resumed work, and ever since has worked whenever he could find employment. His strength gradually returned, and his color improved markedly. On December 21, 1903, patient presented himself at my office looking well, feeling

well, and having absolutely nothing to complain of except an occasional very slight backache. He has had no uræmic attacks, no headaches, no stomach disturbances and no œdema anywhere since operation. Cardiac hypertrophy less than before operation, and heart's action regular. The basic murmur has disappeared; the systolic murmur over apex persists.

Urine examinations.—Number made, twenty-nine.

CASE No. 33.—L. D., male, 20 years of age; weight, 54.5 kilograms.

Operation: May 12, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
May 10, 1902. (before operation.)	2070 c. c.	1015	72.34 grams.	1.9 grams in 24 hours.	35% by bulk, Heller.	Numerous granular, hyaline and epithelial casts.
Jan. 24, 1903.	1800 c. c.	1006	25.16 grams.	9.0 grams in 24 hours.	10% by bulk, Heller.	Numerous fine and coarse granular, some having fat droplets; many hyaline; a few waxy. Numerous red blood cells. Moderate number of leucocytes. Occasional renal cell.
June 20, 1903.		1005		0.4%	5% by bulk, Heller.	Fairly frequent hyaline and fine granular. Occasional waxy and epithelial hyaline. Numerous isolated red blood cells.
Dec. 22, 1903.	3000 c. c.	1010	69.9 grams.	10.5 grams in 24 hours.	0.6%	Very numerous granular, many of them with fat droplets. Numerous epithelial and frequent plain hyaline. Few true epithelial and waxy. Numerous isolated red cells. Moderately frequent leucocytes. Numerous renal cells, most of them showing fatty change.
April 4, 1904.	2760 c. c.	1008	51.45 grams.	11.04 grams in 24 hours.	10% by bulk, Heller.	A few hyaline, numerous epithelial, fine and coarse granular, some with fat droplets. Occasional waxy. Many isolated red cells. A few leucocytes. Many renal cells.
July 7, 1904.	2250 c. c.	1007	36.7 grams.	9.0 grams in 24 hours.	0.3%	Frequent hyaline, mostly epithelial. Numerous coarse granular, some partially fatty. A few mixed, blood and epithelial. Rarely a waxy. Numerous isolated red cells. Moderately frequent leucocytes. Many renal cells, some partially degenerated and showing fat droplets.

Result.—Apparently contradictory. Perfectly satisfactory as far as the patient's general condition is concerned, and not

satisfactory as regards the urinary manifestations. That the operation saved the patient from impending death was the conviction of all who saw him before operation. Not alone did it do that, but it restored him to a life of usefulness and comfort.

Case No. 34.

(Compare page 74.)

D. L. D., male, 62 years of age. Patient of Dr. F. M. Woodard, Springfield, Tenn.

Family history not relevant.

History prior to operation.—Considered himself well until January, 1902, when headaches and failure of sight developed. Examination of the eyes showed retinitis albuminurica, and urine examination confirmed the diagnosis of chronic Bright's disease.

Examination.—Healthy-looking man for his years. Chest ample and lungs healthy. Moderate hypertrophy of heart; aortic obstructive murmur. Kidneys in place.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year?
- b) As known from urine examination, four months.

Operation.—May 26, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys reduced to two-thirds the normal size and hardened from chronic interstitial inflammation. Granular condition of kidney surfaces after removal of capsule.

Diagnosis.—Right and left chronic interstitial nephritis.

Urine examination.—The only examination, made five days before operation, shows albumin, 50 per cent. by bulk; specific gravity, 1.009; urea, 1.0 per cent.; innumerable casts of all kinds, except waxy; numerous granular and fatty renal elements.

Result.—Sudden death from acute dilatation of the heart, or from cerebral embolism, twelve hours after operation.

Case No. 35.

(Compare page 74.)

R. N. H., male, 56 years of age, physician.

Family history not relevant.

History before operation.—In May, 1901, patient noticed great diuresis—4,000 c. c. daily, with low specific gravity—and examination of urine showed chronic Bright's disease. During the year past, œdema of face and hands, progressive weakness, rapid aging, uræmic manifestations, tumultuous action of the heart, and great dyspnœa on exertion, have been the main symptoms. Retinitis albuminurica developed in February, 1902.

Examination.—Patient thin and cachectic in appearance. Heart markedly hypertrophied; systolic murmur over base, apex and aorta. Dicrotism and high tension of pulse. General advanced arteriosclerosis. Extensive neuro-retinitis albuminurica in both eyes. Œdema of lower extremities.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years?
- b) As known from urine examination, one year.

Operation.—May 26, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys granular on surface, hard, and contracted to about three-fourths the normal volume by chronic interstitial inflammation.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary healing of both wounds.

History after operation.—Improvement followed operation, and was maintained until August, 1902, when he grew gradually worse, intense dyspnœa and inability of the stomach to retain food being the most distressing features until his death, which occurred on November 6, 1902, five months and eleven days after operation.

Urine examinations were made to the number of 29. Four days before operation, urine examination showed: Specific gravity, 1.010; albumin, 10 per cent., by bulk; urea, 1.2 per cent.; innumerable casts of all kinds, except waxy; numerous granular and fine fatty renal elements. The changes after operation consisted in a temporary increase in the daily urea output, and a temporary diminution in the amount of albumin and in the number of casts. The favorable changes were

marked for the first three weeks, and not so decided for the fourth week after operation, after which time the patient passed from observation.

Result.—Temporary improvement, followed by death from uræmia, five months and eleven days after operation.

Case No. 36.

(Compare page 75.)

E. T. W., male, 50 years of age, physician.

Family history not pertinent.

History prior to operation.—The patient considered himself in fair health until he awoke one morning in April, 1901, with partial paralysis of the right half of the body, examined his urine, and found he had chronic Bright's disease. In February, 1902, hemorrhage into the left optic nerve was followed by transient total blindness. Slight œdema and stomach disturbance, progressive loss of strength, urgent dyspnœa, and tumultuous heart action were the chief other symptoms.

Examination.—When patient reached my office with his brother, also a physician, he was scarcely able to breathe, even in the upright posture. The lungs were emphysematous, the heart was hypertrophied to the verge of dilatation, with an occasional aortic regurgitant murmur, and the pulse was dicrotic. He came to me for operation from a great distance, fully aware of his extreme condition and his desperate chances. He requested his brother's and my own frank opinion as to how long he was likely to live without operation and as to his chances of surviving operation. When we declared two weeks as the probable extreme limit of life without operation, and that death would probably result from operation, he reflected for a moment and then said: "Very well. I am ready and willing to pit two weeks of the life I am leading against even a very small chance of improvement by operation. I wish you to decapsulate my kidneys."

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, one year and one month.

Operation.—May 26, 1902, at the Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and oxygen, ether, and chloro-

form. Dr. Thomas L. Bennett began with the first, but was obliged to change to the second, and subsequently to the third to prevent death on the table.

Condition of kidneys at operation.—Both kidneys granular on surface, hard, and shrunken to about two-thirds the normal volume, as a result of chronic interstitial inflammation.

Diagnosis.—Right and left chronic interstitial nephritis.

Urine examination.—The only examination made showed albumin in large amount, casts of all kinds and renal elements, and great diminution of urea.

Result.—Sudden death from acute dilatation of heart, twelve hours after operation.

Case No. 37.

(Compare page 85.)

R. G. F., male, 51 years of age, physician, married.

Family history excellent. Father, aged 83; mother, aged 79; only brother, aged 48, and only sister, aged 42: all alive and well.

History prior to operation.—An attack of diphtheria, in 1876, was followed by general paralysis lasting five months. After that his health was never good. In 1885 his eyesight failed, and retinitis albuminurica and chronic Bright's disease were diagnosticated. A varying amount of œdema, uræmic headaches, backaches, and attacks of gout, have been the symptoms for seventeen years past. In 1886 the doctor retired from professional work, and sought recuperation, for three and a half years, in a mild climate in the Middle West. Finding that the climate did him more good than anything else, the doctor resolved to spend his life in that locality, and established a sanitarium chiefly for the reception and treatment of cases of chronic Bright's disease. There he remained for twelve years, taking care of himself and his patients, until he heard of renal decapsulation for chronic Bright's disease, when he hastened to New York and asked me to operate upon his kidneys.

Examination.—Patient subject to gout; gouty deposits in all the joints of fingers. Heart greatly enlarged; its action very irregular and tumultuous; compensation, however, still good. General arteriosclerosis; high-tension, dicrotic pulse. Sallow,

emaciated, cachectic appearance. Excessive tympanites.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, 20 years.
- b) As known from urine examination, 17 years.

Operation.—June 2, 1902, at Post Graduate Hospital.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys were found in practically the same condition. Capsules readily removed, leaving a mottled, yellow and brown surface everywhere. Even induration and shrinkage of the kidneys to about three-fourths the normal size.

Diagnosis.—Right and left chronic diffuse nephritis.

History since operation.—Under date of January 19, 1903, the doctor writes: "I can only state that the operation did me a whole lot of good. I was operated upon, June 2, 1902, and on July 12 I went to work again. I gradually gained strength and flesh, my color improved, and the uræmic headaches disappeared. By September the general dropsy had entirely disappeared. I am at work, and feel better than at any time for the past five years."

The only time I have seen the doctor since operation was on September 29, 1903, when I found him rugged-looking and plump, with a perfectly healthy complexion, whereas, before operation, he presented a very sick, emaciated, sallow and cachectic appearance. The tumultuous, irregular action and hypertrophy of the heart had disappeared, and the most critical examination failed to detect anything abnormal about the heart. Former œdema, backaches and headaches had permanently disappeared. The only things he suffered from were his inveterate gouty tendencies and a cold, contracted in July, which had clung to him obstinately for the past two months. The condition of the urine improved steadily after operation until, in about eight months, it became entirely normal for the first time in eighteen years. It remained normal from January, 1903, to July, 1903, when, coincident with the contraction of a severe cold, a slight acute infection of the kidney manifested itself. Since that time the general health and the condition of the urine, although much better than at any time prior to operation, are not as satisfactory as they were in the early half of 1903.

Urine examinations.—I have records of fifty examinations, and the doctor himself probably has records of several hundred more, being a diligent observer of himself and of his urine. I subjoin the records of eight examinations made at various times before and after operation.

CASE No. 37.—R. G. F., male, 51 years of age; weight, 63.5 kilograms.
Operation: June 2, 1902.

Date.	Amount of urine in 24 hours.	Spcc. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
May 29, 1902. (before operation.)		1007		1.0%	20% by bulk, Heller.	Numerous granular and hyaline; occasional fine fatty and epitheliated. Occasional isolated leucocyte. Rarely a granular and finely fatty renal epithelium.
Jan. 19, 1903.	1200 c. c.	1014	39.14 grams.	15.6 grams in 24 hours.	5% by bulk, Heller.	Numerous large coarsely granular; occasional epithelial. Occasional pus cell.
June 27, 1903.		1020		1.7%	none.	None.
Sept. 29, 1903.		1026		2.4%	0.1%	Rather frequent hyaline, frequently with one or more renal cells adherent. Occasional fine granular. Occasional isolated blood cell. Rarely a leucocyte and renal cell. "Slight acute exacerbation."
Dec. 30, 1903.	840 c. c.	1020	39.14 grams.	1.1%	0.05%	A few hyaline.
Jan. 21 1904.	2400 c. c.	1012	67.1 grams.	18.0 grams in 24 hours.	marked tracc.	Rather frequent hyaline. Rarely a fine granular. Rarely an isolated red cell. Few leucocytes.
March 24, 1904.	960 c. c.	1020	44.74 grams.	13.44 grams in 24 hours.	0.025%	Fairly frequent hyaline, a few epitheliated and a few partially granular. Occasional isolated red cell. A few leucocytes.
May 21, 1904.	1260 c. c.	1013	38.17 grams.	15.12 grams in 24 hours.	0.05%	Few small hyaline and small finely granular. Rarely an epitheliated hyaline. Rarely an isolated red cell. A few leucocytes.
July 19, 1904.	1200 c. c.	1014	39.14 grams.	12 grams in 24 hours.	0.04%	Many small hyaline. Occasional epitheliated hyaline. A few granular. Occasional red cell and leucocyte.

Result.—A temporary or transient cure of chronic Bright's disease, right and left chronic diffuse nephritis, of nearly twenty years' standing, attained within nine months after operation. Accompanying the improvement in general health

and in the condition of the kidneys, all evidences of a far advanced cardiac hypertrophy have disappeared. After six months of entire absence of albumin and casts from the urine, a new renal infection, or an exacerbation of the old nephritis, developed, which, in a mild degree, persisted on May 21, 1904, the date of last report.

Case No. 38.

M. S., female, aged 49 years, married. Patient of Dr. Henry Ruhl, 842 East 164th Street, New York.

Family history.—Father and mother died at a good old age. One brother died at 60, of diabetes. One brother died at 50, from an accident. A sister died at 28, of typhoid fever.

History prior to operation.—With the exception of occasional attacks of rheumatism, patient considered herself well until a year ago. Since then pains in left hip, irritability of bladder, digestive disturbances, loss of strength and weight, dyspnœa, and, for the past three months, œdema of lower extremities and of trunk, and pronounced uræmic symptoms.

Examination.—Patient very stout; still weighs 98 kilograms, although, during the past three months, she has lost 16 kilograms in weight. Urgent dyspnœa, with lividity and puffiness of face, and great œdema of abdominal walls and lower limbs. Heart moderately enlarged and fatty; systolic bruit, loudest over base. Decided arteriosclerosis and high-tension pulse.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year.
- b) As known from urine examination, three months.

Operation.—June 12, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney slightly large; left kidney normal in size. Both kidneys, after removal of capsule, mottled deep and light red, with slight admixture of yellow everywhere.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Patient rallied unexpectedly well, considering her very low condition and the difficult

nature of the operation, the kidneys being almost inaccessible in the depths of the wound on account of combined stoutness of the patient and excessive œdema of the back. Marked improvement in the general health and in the character of the urine followed operation almost at once and, with the exception of an attack of glycosuria in January and February, 1903, which lasted about six weeks, has been continuous to date. On December 28, 1903, I saw the patient for the first time since her discharge, and could scarcely realize that she was the same woman upon whom I had operated a year and a half previously. Her natural color had returned, and she looked and acted like a well woman. She had nothing to complain of except occasional rheumatism. She assists in her housework, does not get tired, and breathes freely. There has been no recurrence of œdema or of any manifestation of uræmia. Heart's action is regular and steady; the systolic murmur, however, persists. Last report, July 1, 1904, affirms the continuance of good health.

Urine examinations.—Number made, twenty-eight.

CASE No. 38. M. S., female, 49 years of age; weight, 100 kilograms.
Operation: June 12, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
June 6, 1902. (before operation.)		1026		4.0%	25% by bulk, Heller.	Large numbers small and large hyaline and fine granular; occasional epitheliated and fine fatty. Occasional isolated pus cell. Occasional renal epithelium.
June 16, 1902.	810 c. c.	1026	49.07 grams.	22.68 grams. in 24 hours.	20% by bulk.	Large numbers hyaline, granular and epithelial.
Jan. 25, 1903.	1680 c. c.	1030	117.43 grams.	28.56 grams. in 24 hours.	0.1%	Numerous hyaline; few hyaline epitheliated; occasional granular. Sugar present in appreciable amount.
June 22, 1903.	1830 c. c.	1021	89.54 grams.	47.58 grams in 24 hours.	0.05%	Numerous hyaline and hyaline epitheliated; few fine granular; rarely a waxy. Numerous isolated red cells. Moderately frequent leucocytes. Large numbers of renal elements from all parts of kidney.
Dec. 26, 1903.	1860 c. c.	1020	86.67 grams.	42.78 grams in 24 hours.	0.05%	Moderately frequent hyaline and fine granular. Few hyaline epitheliated. Rarely a red blood cell.

July 1, 1904.	1920 c. c.	1022	98.42 grams.	49.92 grams in 24 hours.	5% by bulk.	Frequent hyaline, plain and epitheliated. Occasional fine granular. Frequent isolated red cells. Moderate number of leuco- cytes.
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Result.—Extremely satisfactory. A patient rescued from impending death, with steady improvement in both general health and condition of urine, beginning with the date of operation and continuous to date, more than two years after operation.

Case No. 39.

(Compare page 76.)

G. F. C., male, 67 years of age, widower physician.

Family history unimportant.

History prior to operation.—Patient was severely ill thirty years ago with renal stones and acute nephritis, vomiting for an entire month, and having dropsy of the lower extremities lasting several months. In 1895 he had a sudden attack of hemiplegia, due to cerebral embolism, the result of a cardiac lesion, and was paralyzed on one side of the body for nearly a year. Retinitis albuminurica and chronic Bright's disease were discovered in June, 1901. Suffers much from backaches and visual disturbances.

Examination.—Patient a very heavy, fat man, weighing 110 kilograms. Hypertrophy of the heart, with beginning dilatation, mitral regurgitation, and general arteriosclerosis were the unpromising features of the case. In spite of the unfavorable outlook, the patient, a life-long personal and professional friend, insisted that he was entitled to the chance afforded by operation, and demanded that I perform it.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, eight years.
- b) As known from urine examination, one year.

Operation.—June 14, 1902, at home of patient.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney normal in size; left kidney a little large. Both kidneys showed an even admixture of parenchymatous and granular nephritis. The kidney surfaces were rough and uneven after removal of

the capsules, and dark and light red mottling was distinctly marked everywhere.

Diagnosis.—Right and left chronic diffuse nephritis.

History after operation.—Left hemiplegia, of cerebral origin, developed on the day following operation; heart failure threatened from the very beginning; and the kidneys did not act satisfactorily, only 640 c. c. of urine being passed during the fifty-six hours the patient lived after operation. In spite of all our efforts, the patient died of uræmia and heart failure on June 16, 1902.

Urine examination.—The only record in my possession, dated June 11, 1902, three days before operation, shows: Specific gravity, 1.018; albumin, 5 per cent. by bulk; urea, 2.1 per cent.; innumerable large and small hyaline, fine granular, epitheliated, and occasional fine fatty casts; occasional granular and fine fatty renal elements.

Result.—Death, fifty-six hours after operation, from uræmia and cerebral hemiplegia.

Case No. 40.

(Compare page 76.)

C. C., male, 29 years of age, single. Patient of Dr. A. V. Rockwell, 4247 Third Avenue, New York.

Family history.—Three uncles died of Bright's disease.

History prior to operation.—Patient first consulted me on March 7, 1902. Chronic Bright's disease was discovered six months previously; shortness of breath, violent thumping of heart, growing weakness, and loss of weight were the chief symptoms. Patient has just passed through a mild attack of typhoid fever, which began nearly two months ago. The patient postponed operation, and in April, 1902, had a severe attack of diphtheria. Following this, great œdema of feet and abdominal dropsy developed. He returned to my office three and a half months after his first visit, and requested that operation be performed before I sailed for Europe on my vacation.

Examination.—Face livid; breathing extremely difficult; feet greatly swollen. Immense hypertrophy of the heart, with violent and irregular thumping, galloping rhythm, and extreme displacement of the apex beat to the left. Prof. A. Caillé, who

saw the patient in consultation, considered that the heart was concentrically hypertrophied and would stand a narcosis.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, nine months.

Operation.—June 26, 1902, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney one-half, and left kidney two-thirds the normal volume. Both kidneys hard. The kidney surface, after removal of the capsules, presented one mass of granulations, yellowish from fatty degeneration.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History after operation.—Patient never made any satisfactory progress after leaving hospital. He died very suddenly, of acute dilatation of the heart, on November 1, 1902, a little over four months after operation.

Urine examination.—Twenty records are in my possession, all of practically the same tenor as the one here given from an examination made March 7, 1902, more than three months before operation. The record runs: Specific gravity, 1.009; albumin, 20 per cent. by bulk; urea, 1.0 per cent.; numerous hyaline, fine granular and mixed casts (leucocytes, epithelia and granula); innumerable pus cells, often in small masses, resembling fragments of casts; occasional granular renal element.

Result.—No appreciable improvement. Death from acute dilatation of the heart on November 1, 1902, a little over four months after operation.

Case No. 41.

E. F., female, 27 years of age, single. Patient of Dr. Henry Ruhl, 842 East 164th Street, New York.

Family history not pertinent.

History prior to operation.—Patient suffered from inflammation of the bowels ten years ago. Well after that until three years ago. Since then backaches, dyspepsia, cardiac palpitation. For past five to six months, in addition to above,

occipital headaches, and occasional vesical irritability.

Examination.—Patient anæmic and feeble. Heart action somewhat strong; no murmur. High-tension pulse and beginning changes in the walls of some of the arteries. Right kidney movable ten centimeters; left kidney movable eight centimeters.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, three years.
- b) As known from urine examination, one month.

Operation.—October 2, 1902, at Post Graduate Hospital.

Decapsulation and fixation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Much chronic perinephritis on both sides, especially around lower pole of left kidney. Right kidney normal in size, beef red, with dark mottling predominating. Left kidney a trifle large, especially the lower pole; otherwise in same condition as right.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Progressive improvement in general health for six months after operation. Since that time, symptoms due to complicating disorders of the pelvic organs, from which patient is suffering, have become dominant and made the patient's life unhappy. When last seen, December 22, 1903, she was just recovering from a severe attack of grippe, and it was impossible to estimate fairly her average condition. Last report, received July 4, 1904, states: "I still suffer with headaches, backache, and my stomach, but nevertheless I feel better than last year."

Urine examinations.—Number made, thirty-five.

CASE No. 41.—E. F., female, 27 years of age; weight, 55 kilograms.

Operation: October 2, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Sept. 6, 1902. (before operation.)		1008		1.0%	faint trace.	Occasional hyaline, granular and fine fatty. "Some insidious lesion here." —Prof. H. T. Brooks.

Jan. 25, 1903.	960 c. c.	1020	44.74 grams.	21.12 grams in 24 hours.	faint trace.	One small hyaline found. Occasional leucocyte.
June 27, 1903.		1006		0.9%	none.	None.
Dec. 13, 1903.	630 c. c.	1023	33.76 grams.	11.97 grams in 24 hours.	none.	Very rarely a hyaline. Occasional isolated red blood cell, and a few leucocytes. Patient is just recovering from an attack of grippe.
April 1, 1904.	840 c. c.	1024	46.97 grams.	23.52 grams in 24 hours.	none.	Very rarely a hyaline. Rarely a red cell and leuco- cyte.
July 8, 1904.	1440 c. c.	1015	50.33 grams.	27.36 grams in 24 hours.	faint trace.	Rarely a hyaline.

Result.—A practical cure. The urine became normal four months after operation, and has remained practically normal up to the present time, one year and nine months after operation. The patient's general health has not improved to an equal degree with that of the kidneys, much suffering being occasioned by chronic disorders of the pelvic organs.

Case No. 42.

J. L. S., male, aged 36 years, single. Patient of Dr. W. S. Smith, Rushville, Illinois.

Family history.—Father died at age of 36, of consumption. Mother died as the result of an accident, at age of 34. Only brother living and well.

History prior to operation.—For past three years various dyspeptic disturbances and headaches. A prolonged exposure to wet, in the fall of 1900, was followed by chills, fever, dull backache, and general disturbance of health. A similar exposure, in the autumn of 1901, was followed by a similar, though milder attack. In the spring of 1901, a faint trace of albumin and a single hyaline cast were found in the urine. For the past year and a half, at repeated urine examinations, albumin now and then, and casts in small numbers, were found. For over two years past, much violent action of heart, frequent dyspnœa, and excessive weakness and drowsiness. For a year past, moderate œdema of feet, and, once or twice, a little puffiness under eyes.

Examination.—Moderate pallor and emaciation. Slight œdema of ankles. Lungs normal. Considerable concentric hypertrophy of heart, with marked accentuation of second aortic sound. Decided arteriosclerosis. Right kidney readily palpable; left kidney in place, not palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, three years.
- b) As known from urine examination, one year and a half.

Operation.—October 10, 1902, at Post Graduate Hospital.
Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney about two-thirds normal size. After removal of capsule, a red, granular surface everywhere. Left kidney, normal in size, mottled deep and light red over entire surface after removal of capsule.

Diagnosis.—Right chronic interstitial nephritis; left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—For three or four months no perceptible change. After that, gradual return of strength, disappearance of backaches, uræmic headaches, and œdema.

Under date of March 8, 1904, patient writes: "While the improvement has been slow, when I look back and remember how I was a year ago or two years ago, I can see a big change for the better. The past year have not missed a day from business on account of sickness, although there have been times when I felt far from being real well. Many of my old symptoms have entirely disappeared. Have not had the difficulty in breathing since a month or so after operation."

Patient married in March, 1903. Letters since that date are of cheerful tenor, stating that he feels better in every way than prior to operation. Last advices, May 21, 1904, of same tenor as above.

Urine examinations.—Records of some twenty are in my possession. They are all of about the same import as the four appended. The urinary manifestations of this case have always been mild when compared with the extensive changes observed in the kidneys at operation and with the severity of the symptoms.

CASE No. 42.—J. L. S., male, 36 years of age; weight, 56 kilograms.

Operation: October 10, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Oct. 8, 1902. (before operation.)		1020		2.5%	minute trace.	Rarely a small hyaline. Numerous mucous shreds.
Feb. 8, 1903.	1700 c. c.	1016	63.38	20.4 grams in 24 hours.	none.	None.
July 15, 1903.	1000 c. c.	1026	60.58	18.0 grams in 24 hours.	none.	Occasional hyaline.
Jan. 10, 1904.	1350 c. c.	1016	50.33	27.0 grams in 24 hours.	minute trace.	Rarely a hyaline.
May 23, 1904.	660 c. c.	1028	43.49 grams.	22.5 grams in 24 hours.	none.	Occasional hyaline.

Result.—All examinations of urine made since operation give practically normal results. The same may be said, however, of the examination made just prior to operation. The diagnosis of chronic nephritis in this case rested more upon the general disturbances and physical manifestations, œdema, cardiac hypertrophy, high-tension pulse, arteriosclerosis, and uræmic symptoms than upon the results of urine examinations. The disappearance of all these symptoms, and the patient's present good state of health, warrant us in classing the result as a probable cure.

Case No. 43.

F. M. S., male, 34 years of age, single. Patient of Dr. G. P. Huguely, Atlanta, Ga.

Family history.—Negative as regards Bright's disease and tuberculosis. Mother and father alive and well at over sixty years of age. Two brothers and one sister living; none dead.

History prior to operation.—Well up to eight years ago. At that time was ill with typhoid fever for two months. Lung symptoms followed the typhoid, and, with occasional remissions, cough and expectoration have persisted ever since. In 1899 tubercle bacilli were found in the sputa and the patient

went to Colorado for his health. On August 1, 1900, Dr. Bonney, of Denver, Col., diagnosticated the presence of chronic Bright's disease in addition to tuberculosis, and advised the patient to come to me for decapsulation, informing him that, with the handicap of chronic nephritis, he could not hope to hold out long against tuberculosis; whereas, if he could get rid of his nephritis, he might live out his natural term of life in Colorado, the climate of which held his tuberculosis in abeyance. Frequent examinations of the sputa and urine during the past three years have always shown the presence of both tuberculosis and chronic nephritis. Five years ago, patient had an attack of acute appendicitis, and since then five milder attacks. Two weeks ago, decided uræmic symptoms, headache, nausea and vomiting developed.

Examination.—Face anæmic; lips livid. Large cavity and widespread infiltration in anterior portion of right lung, middle and lower lobes; smaller cavity with surrounding infiltration in left lung, middle of anterior portion. Râles abundant everywhere over both lungs. Heart hypertrophied, with apex beat displaced to right; no murmurs. Neither kidney palpable. The urine contained thirty per cent. of albumin by bulk, and was loaded with casts.

It looked like a hopeless case from any point of view, and the patient was so informed. "Doctor, what would you do if you were in my place?" I parried the question by the remark that ninety-nine men out of a hundred would give up the fight for life. With quiet, heroic courage the patient said: "I am the one hundredth man, and I want you to perform your operation on my kidneys."

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, three years.
- b) As known from examination of urine, two years and two months.

Operation.—October 13, 1902, at Post Graduate Hospital. Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidneys at operation.—Both kidneys normal in size. Capsule readily removed. Kidney surfaces glistening with dark red, light red and some yellowish mottling.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—The immediate effects of the operation were in the nature of an agreeable surprise, as far as the lungs were concerned. All cough ceased as if by magic, and it was not until about three weeks after operation that the nurses heard the patient cough, and then only on rare occasions during the fourth and last week of his stay in hospital. With the bad condition of his lungs, we had dreaded giving chloroform or ether, and nitrous oxide and oxygen were administered by Dr. Thomas L. Bennett. Whether this anæsthetic was responsible for the cessation of the cough I do not know.

Instead of returning to Colorado after operation, patient returned to his home in Georgia, and went into business, where he has steadily remained ever since. The symptoms yielded slowly but steadily, and on December 12, 1903, patient writes: "Am glad to report to you that my general health is better than for several years. Except for my lung trouble, I am in splendid health, work hard every day, sleep well and have a good appetite."

His last report, dated July 2, 1904, reads: "Am glad to report that my general health continues to improve, both with regard to my lungs and kidneys. My color and appetite are good and I sleep well. My health is far better than in any July for five years."

Urine examinations.—Records of thirty examinations are in my possession, from among which the following are selected. They indicate favorable progress, and, taken in conjunction with the patient's gain in general health, justify the hope of further improvement in the urine.

CASE No. 43.—F. M. S., male, 34 years of age; weight, 60 kilograms.

Operation: October 13, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Oct 8, 1902. (before operation.)		1019		2.0%	30% by bulk, Heller.	Innumerable large and small (chiefly the latter) hyaline, granular and epitheliated. Occasional isolated leucocyte. Occasional granular and partly disintegrated renal element.

Jan. 27, 1903.	1710 c. c.	1017	67.73 grams.	22.23 grams in 24 hours.	1.71 grams in 24 hours.	Numerous hyaline, many epitheliated; occasional granular and waxy. Rarely a leucocyte.
June 26, 1903.	2920 c. c.	1008	54.33 grams.	23.36 grams in 24 hours.	marked trace.	Frequent hyaline.
Oct. 29, 1903.	2000 c. c.	1008	37.28 grams.	22.0 grams in 24 hours.	marked trace.	Moderately frequent hyaline, some epitheliated and some with fine granular appearance in certain parts of the cast. Occasional isolated blood cell. "Slight exacerbation."
Jan. 4, 1904.	2040 c. c.	1012	57.04 grams.	24.48 grams in 24 hours.	3.06 grams in 24 hours.	Rather frequent hyaline and partially granular. Rather frequent isolated blood cells. Few leucocytes.
April 14, 1904.	1620 c. c.	1016	60.39 grams.	24.3 grams in 24 hours.	1.016 grams in 24 hours.	Many hyaline, some of them epitheliated and some partly finely granular. Frequent isolated red cells. Few leucocytes. Rarely a renal cell.
July 14, 1904.	2100 c. c.	1009	44.04 grams.	10.5 grams in 24 hours.	1.05 grams in 24 hours.	Moderately frequent hyaline. Occasional red cell and leucocyte.

Result.—Decided improvement, with a reasonable hope of further favorable progress. All things considered, as detailed in the history, the result is an exceedingly gratifying one. The condition of his general health is satisfactory to the patient, and the urine shows a steady tendency to improvement.

Case No. 44.

G. M. H., male, 51 years of age, married. Patient of Dr. Cecil Champenois, Meridian, Miss.

Family history not pertinent.

History prior to operation.—Habits always of the best. Life insured in February, 1900; insurance declined by another company in February, 1901, on account of the existence of chronic nephritis. Since the latter date, constantly albumin and casts in urine. In July, 1902, had an attack of right hemiplegia, recovering but slowly and imperfectly from the paralysis. Pain in the left lumbar region for the past six months has been about the only other symptom.

Examination.—Patient presents a fairly healthy appearance, a mild paralysis of one side of the face, and a deflection of the tongue on protrusion, being the only things

to find fault with. Heart apparently in good condition, a marked accentuation of second aortic sound constituting the only abnormality. High-tension pulse and marked arteriosclerosis. Kidneys not palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years;
- b) As known from urine examination, one year and nine months.

Operation.—October 26, 1902, at Post Graduate Hospital.
Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Chronic perinephritis on both sides. Both kidneys reduced to about two-thirds the normal size. After removal of capsule the appearances indicated an even admixture of parenchymatous and interstitial inflammation, the surface of each kidney being mottled deep and light red.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History after operation.—Patient rallied well from operation and began to improve at once in general health. This improvement was maintained for a little over three months. In February, 1903, symptoms of cardiac failure began to manifest themselves, and these occupied the foreground of the clinical picture during the balance of his days. The character of the urine was improved after operation, and the improvement lasted to the time of his death. Patient died suddenly of acute dilatation of the heart on September 10, 1903.

Urine examinations.—I have records of 22 examinations. One made prior to operation, on October 23, 1902, gives: specific gravity, 1.022; albumin, 30 per cent. by bulk; urea, 2.5 per cent.; innumerable casts of all kinds, both large and small, except waxy; occasional granular renal elements. Examinations subsequent to operation show steady diminution in the amount of albumin and the number of casts, with about the same urea output as before operation.

Result.—Temporary improvement, followed by sudden death from acute dilatation of the heart ten and a half months after operation.

Case No. 45.

R. W., female, aged 39 years, married. Patient of Dr. J. M. F. Egan, 46 West 120th Street, New York.

Family history.—Father died at 45; cause of death not known. Mother died at 24, of pulmonary tuberculosis.

History prior to operation.—In good health until fifteen years ago. An attack of grippe at that time was followed by acute nephritis becoming chronic and persisting to date. In January, 1902, an attack of acute endocarditis, leaving a mitral murmur persisting to date. Œdema of feet since January, 1902, and dropsy of face for the past three months. Intestinal indigestion and weakness the chief complaints. Patient bedridden for some time past.

Examination.—Face puffy and presenting the characteristic pallor of advanced Bright's disease. Marked œdema of lower extremities. Moderate hypertrophy of heart, and mitral regurgitant murmur. Decided arteriosclerosis. Patient fairly stout and kidneys not palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, fifteen years.
- b) As known from urine examination, fifteen years.

Operation.—November 13, 1902, at home of patient.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Each kidney found converted into a small lump of granulation tissue; chronic interstitial nephritis in its ultimate stage. Right kidney about one-fourth, and left kidney one-third the normal volume. They represent the smallest pair of kidneys I have ever encountered either in the dead house or on the operating table.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—From the condition in which the kidneys were found at operation, and from the known presence of other serious complicating diseases, little or no improvement was or could be expected. The patient, nevertheless, did astonishingly well for more than a year after operation and recovered a fair degree of health. In the beginning of February, 1904, she had a severe attack of influenza, from which she never entirely recovered. She died suddenly of cerebral em-

bolism, on February 23, 1904, fifteen months after operation.

Urine examinations.—Number made, four.

CASE No. 45. R. W., female, 39 years of age; weight, 60 kilograms.

Operation: November 13, 1902.

Date.	Amount of urine. in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Sept. 18, 1902. (before operation.)	1800 c. c.	1009	37.74 grams.	19.8 grams. in 24 hours	30% by bulk, Heller.	Innumerable small and large of all varieties. Occasional isolated blood and pus cells. Large number fatty and granular renal epithelia.
July 15, 1903.				0.4%	20% by bulk, Heller.	Occasional large hyaline, fatty, and coarsely granular. Occasional granular renal element.
Jan. 18, 1904.	940 c. c.	1012	26.28	18.8 grams in 24 hours.	trace.	None observed; field greatly obscured by atypical forms of calcium oxalate.

Result.—Decided improvement, lasting for a year after operation, in spite of coexisting serious diseases not connected with the nephritis. Death from cerebral embolism following an attack of grippe, on February 23, 1904, fifteen months after operation.

Case No. 46.

E. A., male, 35 years of age, single. Patient of Dr. Martin M. Brown, North Adams, Mass.

Family history excellent. Father, mother, four brothers and one sister alive and in good health. One brother died in infancy of pneumonia.

History prior to operation.—Well up to about one and one-half years ago. Since then uræmic stomach derangements and headaches, and for the past year œdema of feet. Subject to colds. Chronic Bright's disease first discovered on application for life insurance in June, 1902. Lately rapid loss of strength and flesh.

Examination.—Pale, pinched features. Moderate œdema of feet. Decided cardiac hypertrophy; no valvular murmur. Advanced general arteriosclerosis.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, five months.

Operation.—November 17, 1902, at Post Graduate Hospital.
Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney about one-half the normal size, granular over entire surface. Granulations markedly yellow and fatty in appearance, many of them resembling small yellow tufts rather than granulations. Left kidney two-thirds the normal size; otherwise in same condition as right.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—For some months after operation no change. Patient then returned to work and appeared to be slowly improving in general health. He visited me on October 14, 1903, nearly a year after operation, under which date I find the following note on my books: "Patient feeling well and looking well. Headaches have almost entirely disappeared. Appetite and digestion very good. Œdema of feet only now and then and slight. No cough. Cardiac action good; hypertrophy of heart about the same, but pulse tension decreased." In January, 1904, uræmic manifestations reappeared. The uræmia gradually deepened, and the patient died of uræmia on June 18, 1904. There was practically complete suppression of urine for forty-eight hours prior to death.

Urine examinations.—Number made, eighteen.

CASE No. 46.—E. A., male, 35 years of age; weight, 57 kilograms.

Operation: November 17, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Nov. 13, 1902. (before operation.)		1013		1.2%	30 to 40% by bulk, Heller.	Numerous hyaline, finely and coarsely granular. Frequent epitheliated, epithelial and fatty. Occasional single leucocyte. Round and fatty renal elements.
March 4, 1903.	2160 c. c.	1013	65.42 grams.	17.28 grams in 24 hours.	15% by bulk, Heller. quantitative, 0.5%	Numerous hyaline, granular and epitheliated. Most of the casts have epithelial cells, many have oil droplets and red cells attached. Numerous free red cells. Few leucocytes.

Oct. 14, 1903.	2200 c. c.	1012	61.51 grams.	15.5 grams in 24 hours.	0.7%	Few hyaline. Innumerable granular, fine, coarse, light and dark, with fat droplets. Occasional red ccll. Few leucocytes. Frequent renal cells, some fatty.
Dec. 28, 1903.	2640 c. c.	1009	55.36 grams.	18.48 grams in 24 hours.	0.5%	Numerous hyaline, granular and epitheliated. Occasional fatty and waxy.

Result.—No great change for three or four months after operation, followed by decided improvement in patient's symptoms and in general health, without corresponding improvement in urine. The general health remained satisfactory for about eight or nine months. Then chronic uræmia, leading to death on June 18, 1904, nineteen months after operation.

Case No. 47.

(Compare page 77.)

F. G. C., male, 23 years of age, single. Patient of Dr. Russell G. Floyd, Eureka Springs, Arkansas.

Family history good.

History prior to operation.—Had typhoid fever in 1893 and has never been strong or quite well since. For the past two years rapid loss of strength, some œdema of face, digestive disturbances, and severe uræmic manifestations were his chief symptoms. Uranalysis in December, 1901, revealed the existence of chronic Bright's disease.

Examination.—Patient profoundly anæmic. Face puffy and pale. Heart greatly hypertrophied; harsh systolic bruit over aortic orifice. Kidneys not distinctly palpable; resistance on deep pressure in region of left kidney.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, nine years.
- b) As known from urine examination, one year.

Operation.—November 26, 1902, at my private hospital.

Decapsulation of right kidney. Excision of left kidney for hydropyonephrosis.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right chronic perinephritis. Right kidney less than one-half the normal size. Capsule very tightly adherent, and separated from the kidney only with the greatest difficulty. After its removal the right

kidney looked like a withered bunch of granulation tissue, with absolutely no semblance, either in shape or appearance, to a kidney. Left kidney converted into a firmly and deeply attached cyst, twenty centimeters in diameter, undergoing purulent transformation. Left ureter thickened to four or five times its normal size and tangentially inserted into pelvis. After aspiration of the contents of the cyst no trace whatsoever of kidney substance could be recognized. As infection of the cyst contents had been shown by uranalysis, the cyst was removed in its entirety.

Diagnosis.—Right and left chronic interstitial nephritis, with conversion of the left kidney into an infected hydro-nephrosis.

Convalescence uneventful. Primary union of both wounds.

History after operation.—Gradual deepening of the uræmia already so profound at operation. Death from uræmia on December 11, 1902, fifteen days after operation.

Urine examination.—An examination made on the day prior to operation reads: Specific gravity, 1.007; albumin, 30 per cent. by bulk; urea, 0.8 per cent.; large numbers small and large, fine and coarsely granular, epitheliated and pus casts; large numbers isolated leucocytes, with occasional small masses; occasional granular renal element. Examinations made subsequent to operation showed less albumin, pus, and fewer casts, but no increase in the urea output.

Result.—Death from chronic uræmia on December 11, 1902, fifteen days after the operation.

Case No. 48.

A. B., female, 42 years of age, single. Patient of Dr. I. Baran, 121 St. Nicholas Avenue, New York.

Family history.—Mother died at 62 of Bright's disease. Father died at 82. One brother died of scarlatina and diphtheria, at age of four.

History prior to operation.—Well up to birth of last child, eleven years ago. Since then, constantly albuminuria and casts. Œdema of face for past four years. Indefinite, not severe, backaches, slight frequency of urination, headaches, and uræmic manifestations during the past year.

Examination.—Patient a heavy woman with bloated, puffy,

and cachectic face. Breathing labored. Heart moderately hypertrophied, with an occasional mitral regurgitant murmur. Arteriosclerosis; high-tension pulse. Kidneys in place, palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, eleven years.
- b) As known from urine examination, eleven years.

Operation.—December 4, 1902, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys of about normal size, mottled red and yellow, the latter color predominating, after removal of capsule.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Soon after her return home patient resumed her household duties, and has carried them on to date. Dyspnœa, œdema, and uræmic manifestations gradually disappeared, and the natural color of the face returned. When last seen, December 23, 1903, she looked well and felt in good health, troubled only now and then by a backache due to pelvic abnormalities. Heart action normal; no murmur. Last report, received July 3, 1904, states that good health continues.

Urine examinations.—Number made, nine.

CASE No. 48. A. B., female, 42 years of age; weight, 75 kilograms.

Operation: December 4, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Dec. 3, 1902. (before operation.)		1019		2.1%	20% by bulk, Heller.	Innumerable of all kinds except waxy; chiefly hyaline, granular and mixed (blood, pus and epithelia). Occasional isolated blood cells. Small number pus cells, chiefly isolated (inflammatory). Occasional granular renal element.
Dec. 8, 1902.	930 c. c.	1021	45.5 grams.	21.39 grams in 24 hours.	strong reaction.	Innumerable, all kinds except waxy. Occasional isolated blood and pus cell. Innumerable granular and fine fatty renal elements.

June 23, 1903.	2520 c. c.	1017	99.81 grams.	27.72 grams in 24 hours.	trace.	None. Occasional mucous cylindroid; rarely an epitheliated cylindroid.
Dec. 24, 1903.	2100 c. c.	1017	81.18 grams.	35.7 grams in 24 hours.	marked trace.	Moderately frequent hyaline. Rarely an isolated blood cell.
April 8, 1904.	2520 c. c.	1013	76.33 grams.	32.76 grams in 24 hours.	5% by bulk, Heller.	Occasional hyaline. Rarely a granular. Occasional red cell. A few leucocytes.
July 3, 1904.	1350 c. c.	1016	50.33 grams.	35.1 grams in 24 hours.	distinct trace.	Fairly frequent hyaline. Occasional partly granular. Occasional red cell. Moderately frequent leuco- cytes.

Result.—Patient was undoubtedly saved by operation from impending death. In about six months after operation the urine became practically normal, and so remained for nearly a year. Latterly the urine, although still vastly improved as compared with its condition before operation, shows a slight tendency to deterioration. The patient's general health, ever since operation and up to date of last report, July 3, 1904, has been perfectly satisfactory. The case may be fairly classed as one of improvement, amounting to almost a practical cure.

Case No. 49.

(Compare page 115.)

M. D., female, 26 years of age, single. Patient of Dr. A. Seibert, 114 East 57th Street, New York, and Dr. F. Schwyzer, 54 East 58th Street, New York.

Family history not pertinent.

History prior to operation.—Patient was admitted to the First Medical Division of St. Francis Hospital on September 23, 1902, suffering from chronic Bright's disease. She was discharged on November 2, 1902, but returned again for treatment on November 22, 1902. On December 2, 1902, she was transferred to my care, for decapsulation, by Drs. A. Seibert and F. Schwyzer, attending physicians.

Examination.—Characteristic pallor of face. Œdema of feet continuous since September 1, 1902. General anasarca for past few weeks. Profound uræmia. Patient voids from 300 c. c. to 600 c. c. of urine per day, with an average urea content of only 0.2 per cent.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year?
- b) As known from urine examination, three months.

Operation.—December 5, 1902, at St. Francis Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys a trifle large and hard. Indistinct deep-red mottling of surface after removal of capsules. So-called large red kidneys.

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful for first month after operation. Primary union of both wounds.

History after operation.—I did not see patient again after operation, she remaining in the care of the house staff of the hospital, from whom I learned that she died of suppurative coxitis and septic pneumonia on April 7, 1903, four months after operation. An autopsy was made, the full details of which will be published by Dr. J. H. Larkin, pathologist to the hospital. The illustration on page 115, showing the establishment of an abundant collateral circulation in the kidney after decapsulation, was made by Dr. Larkin from this case.

Urine examinations.—Before operation, 300-600 c. c. per diem; albumin, 6 grams per liter; urea, 0.2 per cent.; hyaline, granular and epithelial casts, renal elements and blood cells. No great change after operation, except a slight increase of the daily output of urea and solids.

Result.—Death from suppurative coxitis and septic pneumonia, on April 7, 1903, four months after operation. No material improvement followed operation.

Case No. 50.

A. McC., male, aged 34 years, physician, single.

Family history.—Father and mother living, aged 68 and 63, respectively. Four brothers and three sisters living; one of latter has an abscess of lung. Two brothers died of pulmonary tuberculosis; one sister died in infancy.

History prior to operation.—Headaches for past five years. Four years ago, albuminuria first noted, with hyaline and epithelial casts. Since then very frequent uræmic headaches and

bilious attacks. No other symptoms, except diminishing daily amount of urine.

Examination.—Patient looks pale; otherwise of sturdy appearance. Heart normal, or only very slightly hypertrophied; no murmur. Both kidneys in place and readily palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, five years.
- b) As known from urine examination, four years.

Operation.—December 14, 1902, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidneys at operation.—Right kidney three-fourths normal size, mottled yellow and red. Left kidney normal size, mottled dark and light red.

Diagnosis.—Right and left chronic diffuse nephritis; disease farther advanced in right than in left kidney.

Convalescence uneventful. Primary union of both wounds.

History after operation.—Decided and steady improvement in general health and in urinary manifestations, progressive to the present day. Under date of January 22, 1904, the doctor writes: "I have been feeling quite well all summer and so far this autumn and winter." Latest report, May 31, 1904, states that he continues about the same. The uræmic headaches have permanently disappeared.

Urine examinations.—Number made, fourteen.

CASE No. 50.—A. McC., male, 34 years of age; weight, 63.5 kilograms.
Operation: December 14, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Dec. 12, 1902. (before operation.)	930 c. c.	1016	37.28 grams.	14.88 grams. in 24 hours.	20% by bulk, Heller.	Large numbers of <i>all</i> kinds except waxy. Occasional isolated blood and pus cells. Occasional granular renal element.
Jan. 17, 1903.		1014		1.3%	15% by bulk, Heller.	Numerous large and small hyaline. Occasional epithelial and finely fatty. Occasional isolated leucocyte. Occasional granular renal element.
Feb. 10, 1903.	1800 c. c.	1008	33.52 grams.	18.0 grams in 24 hours.	15% by bulk, Heller.	Large numbers large and small hyaline, granular and occasional epithelial. Occasional isolated leucocyte.

March 4, 1903.		1014		1.3%	20% by bulk. Heller.	Large numbers large and small hyaline, fine and coarsely granular; occasional epithelial. Occasional isolated leucocytes. Rarely an isolated blood cell. Rarely a fatty and highly granular renal element.
Sept. 23, 1903.	1500 c. c.	1018	62.91 grams.	24.0 grams in 24 hours.	5% by bulk, Heller.	Frequent hyaline, many epitheliated.
Jan. 25, 1904.	1450 c. c.	1023	77.66 grams.	29.0 grams in 24 hours.	5% by bulk, Heller.	Many hyaline, some of them slightly granular. Few epitheliated. Occasional red blood cell. Few leucocytes.
June 4, 1904.	1350 c. c.	1017	53.47 grams.	21.6 grams in 24 hours.	0.05%	Many hyaline, some partially finely granular and epitheliated. Rather frequent isolated red cells. A few leucocytes.

Result.—Exceedingly satisfactory. Relief of symptoms, especially the uræmic, and continued favorable progress in general health and condition of urine.

Case No. 51.

B. B. R., female, aged 28 years, married. Patient of Dr. E. D. G. Conkling, 232 Belleville Avenue, Newark, N. J.

Family history.—Father living and in good health. Mother died after a miscarriage.

History prior to operation.—Dyspeptic all her life. Headaches from 1896 to 1900, when they disappeared after an operation upon the uterus. Irritability of the bladder, which existed prior to 1900, also partly disappeared after the operation of that year. During past six months, headaches have returned, but are not as constant as formerly. For past three weeks constant backache. A variety of nervous symptoms have run through the history of the case for many years past.

Examination.—Marked pallor and general weakness. Heart slightly hypertrophied; no murmur. High-tension pulse. Right kidney movable twelve centimeters; left kidney movable ten centimeters. Chronic appendicitis. Examination of urine showed the presence of chronic nephritis. Moderate ascites, and slight œdema of feet.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year.
- b) As known from urine examination, three weeks.

Operation.—December 22, 1902, at my private hospital.

Decapsulation and fixation of both kidneys. **Exploration of liver and bile passages and excision of appendix through right lumbar wound.**

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys very markedly lobulated. Chronic perinephritis on both sides, especially on the left, where the vessels of the perirenal fat are very large, very numerous, and enormously congested. Right kidney of normal size, greatly congested, a little hard, and presenting a faint grayish-white and red mottling of the surface after removal of capsule. Surface of left kidney same as that of right; left kidney, however, is of about twice the size of right, harder, and much more intensely congested.

Exploration of the liver, through an opening of the peritoneum, purposely made at the bottom of the right lumbar wound, reveals chronic interstitial hepatitis advanced to near the end of the hypertrophic stage, a typically characteristic specimen of the so-called nutmeg liver. Gall-bladder moderately full of bile; no obstruction of ducts. Clear serous fluid, to the amount of about a liter, flowed from the peritoneum during the operation.

Diagnosis.—Right and left chronic diffuse nephritis, and cirrhosis of liver.

Convalescence uneventful. Primary union of both wounds.

History after operation.—When last seen, February 28, 1903, patient had gained in strength. The ascites had not returned, though the feet were sometimes slightly swollen. The liver had decreased in size, and the kidneys remained firmly anchored. Dyspeptic symptoms and prickling in back of neck formed the chief complaints. The health of the kidneys, as denoted by examinations of the urine, has steadily improved during the fifteen months elapsed since operation.

A written report, received March 20, 1904, states that the prickling in back of neck has entirely disappeared, that the nervous trouble is better and the general health the same as before operation.

Urine examinations were made to the number of twelve, seven of which are appended.

CASE No. 51.—B. B. R., female, 28 years of age; weight, 60 kilograms.

Operation: December 22, 1902.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Dec. 4, 1902. (before operation.)		1020		2.2%	very minute trace.	Rarely a small hyaline and faintly granular.
Dec. 27, 1902.		1016		1.6%	moderate ring.	Innumerable hyaline, fine and coarse granular. Few waxy and hyaline with epithelial and blood cells. Occasional red blood cell and leucocyte.
Feb. 7, 1903.	1900 c. c.	1013	57.55 grams.	17.1 grams in 24 hours.	faint trace.	None.
Feb. 27, 1903.	1440 c. c.	1014	46.97 grams.	20.16 grams in 24 hours.	trace.	Occasional hyaline.
July 1, 1903.	1500 c. c.	1015	52.42 grams.	24.0 grams in 24 hours.	trace.	Rarely a hyaline.
Jan. 12, 1904.	1200 c. c.	1012	33.35 grams.	18.0 grams in 24 hours.	minute trace.	Rarely a hyaline.
May 27, 1904.	1350 c. c.	1024	75.49 grams.	33.75 grams in 24 hours.	trace.	Very rarely a hyaline. Uric acid crystals in enormous amount.

Result.—Slight improvement of general health, and decided improvement in health of kidneys, as denoted by urine examinations. A very favorable result, when the coexisting cirrhosis of the liver is borne in mind.

Case No. 52.

C. L. H., male, 35 years of age, physician, married.

Family history.—Father died at 66. Mother alive and in moderately good health, at 62. Only sister (Case No. 57), aged 27 years, and only brother, aged 25 years, are sufferers from chronic Bright's disease.

History prior to operation.—Since boyhood has always had a sallow complexion and a little puffiness of lower lids. Ill for two years past with headaches, dull backache, and aching over pubis, relieved by drawing up thighs. Considers the headaches chiefly sick headaches. Dyspnœa for two years past. Is able

to make a momentary good muscular effort, but has no endurance. Chronic Bright's disease first recognized by urine tests, in May, 1901. Albumin and casts temporarily disappeared in October, 1901, after two months of absolute rest in bed, an exclusive meat diet, and high-tension faradic currents.

Examination.—Sallow complexion; puffiness of lower lids. Heart normal. Atheroma of right radial and other arteries. Mild general arteriosclerosis. Both kidneys palpable, and movable to a slight degree.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, more than two years.
- b) As known from urine examination, one year and ten months.

Operation.—February 6, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidneys at operation.—Both kidneys a little lardaceous to touch. Kidney surfaces, after removal of capsules, finely mottled, red of two different shades and yellow. Right kidney about normal in size. Left kidney a trifle large.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—Relief in many ways for first two to three months after operation. A letter dated January 3, 1904, however, is not of cheerful tenor. The coexistence of other diseases with the nephritis, both before and since operation, makes it rather difficult to estimate exactly how far each condition is responsible for his subjective ill feelings. Latest report, June 3, 1904, not of hopeful character; patient, however, is naturally of a despondent disposition.

Urine examinations.—Total number made, fifteen, six of which are appended.

CASE No. 52.—C. L. H., male, 25 years of age; weight, 60 kilograms.

Operation: February 6, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Total urea in 24 hours.	Albumin.	Renal casts.
Jan. 10, 1903. (before operation.)	960 c. c.	1013	30.29 grams.	13.44 grams.	faint trace.	Occasional small hyaline and fine granular, rarely an epitheliated and fine fatty.

Feb. 9 1903.	835 c. c.	1028	56.54 grams.	26.0 grams.	marked trace.	Numerous hyaline and granular. Few waxy. Rarely a renal cell.
Feb. 23, 1903.	1700 c. c.	1010	39.77 grams.	22.1 grams.	trace.	Frequent hyaline. Occasional hyaline epitheliated and partially granular. Rarely a red blood cell. Occasional leucocyte.
March 1, 1903.	1600 c. c.	1008	29.82 grams.	19.2 grams.	very faint trace.	Occasional hyaline. Rarely a hyaline epitheliated. Rarely a red cell. Occasional leucocyte.
Jan. 8, 1904.	1680 c. c.	1015	58.72 grams.	21.84 grams.	trace.	Rarely a hyaline. Rarely an isolated red cell. Occasional leucocyte.
June 5, 1904.	630 c. c.	1028	41.1 grams.	19.53 grams.	trace.	Moderately frequent hyaline. Occasional fine granular. Occasional red cell and leucocyte.

Result.—Improvement in urine, especially as regards urea output and character of casts. Only slight improvement in general health reported by patient. Other diseased conditions, not connected with the nephritis, cloud the clinical picture.

Case No. 53.

(Compare page 90.)

C. A. J., female, 23 years of age, married. Patient of Dr. James R. Wood, 45 West 19th Street, New York.

Family history not pertinent.

History prior to operation.—Detailed in full on page 90.

Examination.—Patient eight months pregnant, waterlogged everywhere, comatose, partially blind, semi-unconscious, with frequent severe convulsions. High-tension pulse; temperature slightly above normal. Forced delivery was followed by resumption and continuation of convulsions.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, three months.
- b) As known from urine examination, five weeks.

Operation.—February 17, 1903, at home of patient.

Decapsulation of both kidneys.

Anæsthetic.—Chloroform.

Condition of kidneys at operation.—Both kidneys slightly enlarged, gray-red, turbid from cloudy swelling, fatty, and slightly soft to sight and touch.

Diagnosis.—Right and left subacute or chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—No further convulsions, rapid disappearance of all symptoms, and complete restoration of general health. Steady improvement in condition of urine, with one interruption due to a transient infection. Last seen, May 3, 1904, on which date the general health was all that could be desired, and the urine was perfectly normal.

Urine examinations were made to the number of 30.

CASE No. 53.—C. L. J., female, 23 years of age; weight, 50 kilograms.
Operation: February 17, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Feb. 14, 1903. (before delivery.)	Almost complete suppression.	1032		1.5%	Urine almost solid on boiling. Amount more than albuminometer will measure.	Innumerable small hyaline and granular; a few composite and waxy. Numerous red cells. Moderately frequent pus cells. Many kidney cells.
Feb. 16, 1903. (two days after delivery; one day before decapsulation.)		1014		1.4%	0.1%	Numerous hyaline, granular and epitheliated; fairly frequent waxy; a few fatty and composite. Numerous blood cells; a few leucocytes. Many renal elements.
Feb. 18, 1903.	2010 c. c.	1013	60.88 grams.	28.14 grams in 24 hours.	0.1%	Hyaline less, granular more, epitheliated and waxy about same as February 16. Renal cells about same; leucocytes and blood rather more abundant.
March 21, 1903.		1008		0.7%	5% by bulk, Heller.	Numerous large and small hyaline and finely granular; occasional coarsely granular and mixed (leucocytes, blood and epithelia); no typical pus casts. Rarely an isolated blood cell and granular renal element. Numerous isolated pus cells (fifty in field of $\frac{2}{3}$ objective, after 24 hours' standing). Bacteriological culture demonstrates the presence of the micrococcus urea. Infection passed off in about one week, without any special treatment.
May 10, 1903.		1018		1.3%	faint trace.	Very rarely a hyaline.
July 14, 1903.		1023		2.2%	distinct trace.	Occasional hyaline.
Oct. 26, 1903.		1017		2.7%	marked trace.	Occasional hyaline.

Dec. 31, 1903.	1120 c. c.	1021	54.8 grams.	21.28 grams in 24 hours.	none.	Very rarely a hyaline.
April 14, 1904.	1290 c. c.	1020	60.11 grams.	28.38 grams in 24 hours.	none.	Occasional hyaline.

Result.—An ideal cure of bilateral subacute or chronic parenchymatous nephritis, the patient being perfectly well, and the urine practically normal, fifteen months after operation. In addition, threatened death from puerperal convulsions was averted by the operation.

Case No. 54.

D. M. N., male, 29 years of age, single. Patient of Dr. James W. Putnam, 525 Delaware Avenue, Buffalo, N. Y.

Family history.—Father died at 53, of pleurisy. Mother alive and well, with exception of slight rheumatism. Three sisters and one brother living in the enjoyment of perfect health.

History prior to operation.—In February, 1895, while suffering from acute tonsilitis, the patient had an attack of hæmaturia lasting ten days. In February, 1896, March, 1897, December, 1898, May, 1899, May, 1900, December, 1901, May, 1902, and January, 1903, similar attacks of hæmaturia, varying from five to ten days in duration, and unaccompanied by pain. In February, 1896, during an attack, casts were, for the first time, discovered in the urine, and again in March, 1897. No examination for casts since. Two years ago a severe uræmic attack, with narrowly averted convulsions. For past year much stomach disturbance and notable decline of strength.

Examination.—Patient a robust and vigorous specimen of manhood. Lungs normal. Moderate concentric hypertrophy of heart; no murmur. Both kidneys in place; readily palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, nine years.
- b) As known from urine examination, seven years.

Operation.—February 19, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney mottled

yellow and red over entire surface, a trifle hard, and a trifle below normal in size. Left kidney in same condition as right, but normal in size.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Patient resumed work at once, “doing more work,” as he writes, “than usually falls to a healthily constituted man.” There has been no recurrence of the hemorrhages from the kidneys, with the exception noted below, although microscopically some blood cells are still found in the urine. Strength returned, the patient felt a new interest in life, and, about a year after operation, was contemplating marriage. On April 4, 1904, an attack of uræmic convulsions occurred, followed for two days by hæmaturia. During unconsciousness from convulsions his lower limbs were deeply burned from the careless application of hot-water bottles. The burns kept him in bed for nine weeks, and at date of last report, July 1, 1904, had not yet entirely healed. Under date of June 25, 1904, Dr. J. W. Putnam writes: “For two or three days following the uræmic attack, Mr. N. had hæmaturia and a very scanty excretion of urine. At present he is gaining in weight and improving in strength. The burns were very extensive and of the third degree.”

Urine examinations were made to the number of ten.

CASE No. 54. D. M. N., male, 29 years of age; weight, 80 kilograms.

Operation: February 19, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Feb. 18, 1903. (before operation.)		1016		1.8%	0.25%	Numerous hyaline and epitheliated. Many granular. Few waxy. Numerous pus cells, well preserved. Occasional renal cell.
March 15, 1903.	2000 c. c.	1010	46.6 grams.	34.0 grams in 24 hours.	0.15%	Fairly frequent hyaline, few epitheliated; rarely a granular. Numerous isolated red blood cells. Few leucocytes.
July 10, 1903.	3600 c. c.	1015	125.82 grams.	50.4 grams in 24 hours.	0.1%	Numerous hyaline, occasional granular, rarely a waxy. Numerous isolated red cells; few leucocytes.

Jan. 8, 1904.	3840 c. c.	1011	98.42 grams.	53.76 grams in 24 hours.	0.1%	Rather frequent hyaline. Few fine granular. Frequent isolated red cells. Occasional leucocyte.
July 1, 1904.	3360 c. c.	1006	46.98 grams.	6.72 grams in 24 hours.	distinct trace.	Moderately frequent hyaline, mostly epitheliated. Rarely a fine granular. Frequent red cells. A few leucocytes.

Result.—Immediate and decided improvement, both in general health and in condition of urine, lasting for more than a year after operation. Fourteen months after operation a congestion of the kidneys, accompanied by uræmic convulsions and hæmaturia. Since then suffering chiefly from the effects of hot water bottle burns received during unconsciousness following convulsions.

Case No. 55.

R. S., female, 38 years of age, married. Patient of Dr. Emil Joel, 235 East 10th Street, New York.

Family history.—Father died of old age; mother died in confinement; brothers and sisters all alive.

History prior to operation.—Ill for some fourteen years with a host of nervous and other symptoms, mainly due to mobility of the kidneys. Dr. Joel, her physician, has known of the existence of albuminuria for some months past.

Examination.—Patient a pinched little woman, weighing not more than 35 kilograms. Slight puffiness of eyelids; otherwise no œdema. Heart normal; arteries a little hard. Right kidney movable twelve centimeters; left kidney movable seven centimeters. Chronic appendicitis.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, six months.
- b) As known from urine examination, two months.

Operation.—March 16, 1903, at my private hospital

Decapsulation and fixation of both kidneys, and excision of appendix through right lumbar wound.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney congested, otherwise healthy. Advanced left chronic perinephritis. Left kidney slightly large, mottled, and very hard, from great increase of connective tissue.

Diagnosis.—Left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—The condition of the urine gradually improved until, in about eight months after operation, it was practically normal. The patient gained in weight and improved in general appearance and color, though still afflicted with quite a number of nervous symptoms. On March 30, 1903, two weeks after the kidney and appendix operations, I operated, again under ether, for the relief of several pelvic abnormalities. Patient last seen on April 6, 1904, when she looked plump and the picture of good health; has many indefinite nervous symptoms to complain of, however. Both kidneys are securely anchored. Last report, in writing, received June 24, 1904.

Urine examinations.—Number on file, six; several earlier ones have been lost.

CASE No. 55.—R. S., female, 38 years of age; weight, 40 kilograms.

Operation: March 16, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
April 20, 1903.		1020		1.2%	trace.	Occasional hyaline, rarely a fine granular. A few leucocytes.
June 19, 1903.		1015		1.1%	faint trace.	Occasional hyaline. Rarely a hyaline epitheliated. Rarely a red blood cell. Moderately frequent isolated leucocytes.
Oct. 29, 1903.		1025		1.9%	slight trace.	Occasional hyaline. Occasional blood cell. Moderately frequent pus cells.
Dec. 24, 1903.	1350 c. c.	1016	50.33 grams.	14.85 grams in 24 hours.	none.	Rarely a hyaline.
April 6, 1904.	840 c. c.	1020	39.14 grams.	20.16 grams in 24 hours.	none.	Very rarely a hyaline.
June 24, 1904.	720 c. c.	1024	40.26 grams.	15.84 grams in 24 hours.	none.	A few hyaline.

Result.—An ideal cure of left chronic interstitial nephritis attained eight months after operation and maintained to date, fifteen months after operation. Patient has no symptoms referable to the kidneys, and the urine is normal.

Case No. 56.

J. L., male, 45 years of age. Patient of Dr. James R. Wood, 43 West 19th Street, New York.

Family history irrelevant.

History prior to operation.—Headaches, digestive disturbances, failing eyesight, violent action of heart, and shortness of breath, for past two years. In June, 1902, patient was operated upon for suppurative appendicitis. In January, 1902, Dr. Wood found albumin and casts in the urine.

Examination.—Moderate pallor and cachexia. Dropsy of lower extremities. Marked dyspnoea. Heart dilated to nearly twice the normal size. Occasional systolic bruit over base.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, three years.
- b) As known from urine examination, three months.

Operation.—April 6, 1903, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys normal in size; surfaces, after removal of capsule, everywhere show characteristic pale red and fatty mottling.

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds.

History after operation.—Immediate improvement in general health and in urine after operation. The patient resumed work, filling the position of flagman at a railroad crossing, and remained in apparently good health up to about August 1, 1903, when, as a result of exposure to rain storms for several days, he contracted pleuro-pneumonia. Recovery was never complete as far as the lung lesion was concerned, and after a series of better and worse conditions he died of exhaustion on November 10, 1903.

Urine examination.—Fourteen records are in my possession. Urine before operation showed: Specific gravity, 1.018; albumin, three grams to 1,000 c. c.; urea, 2.0 per cent.; hyaline, granular, epithelial and fatty casts. Two months later only hyaline, hyaline epithelial and granular casts were observed, with decrease in amount of albumin. Three weeks before death, albumin in small quantity and some red blood cells were still

present in the urine, while the casts had entirely disappeared.

Result.—Decided and very satisfactory improvement until the supervention of acute pleuro-pneumonia four months after operation. Death from chronic pleuro-pneumonia on November 10, 1903, a little over seven months after operation.

Case No. 57.

D. A. G., male, 33 years of age, physician, married.

Family history.—Mother died at 62, of some lesion of brain and nervous system. Father in good health at 65. One brother died in infancy. Several brothers and sisters alive and in good health.

History prior to operation. Pain in back for two years past. Albuminuria and casts first discovered on examination for life insurance in May, 1902. Albuminuria ever since. With the exception of backache and loss of weight, patient has no complaints.

Examination.—Slightly pale. Distinct cardiac hypertrophy, with occasional systolic bruit at apex. Vessels normal to touch. Both kidneys in place.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, one year.

Operation.—April 7, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidneys at operation.—Both kidneys, normal in size, present the yellow and red mottling and the feel of chronic parenchymatous nephritis.

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—On January 4, 1904, nine months after operation, the doctor writes: "So far as my feelings are concerned I am as well as I ever was in my life. I am sure I have felt better than for two years. I have been doing moderate work since the first of July. I weigh more than I weighed at any time last winter. I feel sure that I was benefited by the operation." Last report, received May 20, 1904, is of the same tenor.

Urine examinations.—Eight on file.

CASE No. 57.—D. A. G., male, 33 years of age; weight, 67.5 kilograms.
Operation: April 7, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea in 24 hours.	Albumin.	Renal casts.
Feb. 11, 1903.	1680 c. c.	1012	46.97 grams.	21.84 grams.	distinct reaction.	Occasional small hyaline and fine granular, occasional isolated leucocyte.
Feb. 16, 1903.	1680 c. c.	1011	43.05 grams.	16.8 grams.	faint trace.	Same as Feb. 11, 1903.
Feb. 20, 1903. (before operation.)	1560 c. c.	1011	39.98 grams.	20.28 grams.	trace.	Same as Feb. 11, 1903, plus an occasional epitheliated cast.
April 19, 1903.	1100 c. c.	1022	56.39 grams.	35.2 grams.	trace.	Occasional granular and hyaline.
Jan. 8, 1904.	1380 c. c.	1022	70.74 grams.	26.22 grams.	faint trace.	Very rarely a hyaline.
May 20, 1904.	1320 c. c.	1020	61.51 grams.	26.4 grams.	faint trace.	Occasional hyaline.

Result. — Satisfactory. Decided improvement in the patient's general health, as well as in the condition of his urine. The better work performed by the kidneys is indicated by the increased daily excretion of solids and urea.

Case No. 58.

M. G., female, 28 years of age, married, (wife of Case No. 57, and operated upon on same day with her husband).

Family history.—Father died at 66; cause of death unknown. Mother living, at 62. Two brothers (one of them Case No. 52) have chronic Bright's disease.

History prior to operation.—Gradual decline in general health for the past four years, with cardiac palpitation. Albuminuria steadily for past two years. Backaches for past two months. Occasionally slight pain in left kidney.

Examination.—Pale features with wornout expression. Heart slightly enlarged; no murmur. Right kidney movable ten centimeters; left kidney easily palpable, a little large, not movable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, four years.
- b) As known from examination of urine, two years.

Operation.—April 7, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and oxygen.

Condition of kidneys at operation.—Moderate amount of right chronic perinephritis. Right kidney perfectly normal to touch and sight. Advanced left chronic perinephritis. Left kidney enlarged fifty per cent., lobulated, hard, mottled dark and light red.

Diagnosis.—Left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—No decided change in patient's general health is evident from her letters. Complains chiefly of backache, which may, however, not be due to the condition of the kidneys, the patient having retroversion of the uterus. Findings on urine examinations have markedly improved, especially as regards the daily output of solids and urea, which is now practically normal.

Urine examinations.—Total number made, eight.

CASE No. 58.—M. G., female, 28 years of age; weight, 52 kilograms.

Operation: April 7, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea in 24 hours.	Albumin.	Renal casts.
Feb. 11, 1903.	660 c. c.	1017	26.14 grams.	9.9 grams.	3% by bulk, Heller.	Occasional small hyaline and fine granular, rarely an epithelial. Occasional isolated leucocyte.
Feb. 16, 1903.	1020 c. c.			9.18 grams.	faint trace.	Rarely a small hyaline. Numerous pus cells, isolated and in masses.
Feb. 20, 1903. (before operation.)	1140 c. c.	1010	26.55 grams.	10.26 grams.	trace.	Occasional small hyaline and finely granular. Occasional isolated leucocyte.
April 19, 1903.	1400 c. c.	1008	26.08 grams.	19.6 grams.	trace.	Occasional hyaline and granular. One epithelial, one waxy. Rarely a renal element.
May 3, 1903.	900 c. c.	1010	20.97 grams.	11.7 grams.	trace.	Occasional hyaline, rarely an epithelial hyaline. Few leucocytes.
Jan. 8, 1904.	960 c. c.	1023	51.45 grams.	19.2 grams.	faint trace.	Occasional hyaline.
May 20, 1904.	1140 c. c.	1016	42.5 grams.	19.38 grams.	trace.	Occasional hyaline, some epithelial.

Result.—Patient's progress as regards general health re-

tarded by co-existence of other diseases. Satisfactory progress as far as health of kidneys is concerned.

Case No. 59.

F. H. C., male, 47 years of age, physician, married.

Family history.—Father died at sixty, of angina pectoris. Mother and two brothers living and in good health.

History prior to operation.—Headaches since childhood, frontal in character until five years ago; since then occipital. Taken ill five years ago with what the doctor now thinks was an exacerbation of a previous chronic nephritis. Albumin and casts were discovered in urine, and the patient spent three or four months in bed. The doctor has always been a remarkably robust man of fine physique. The headaches, with decided and progressive loss of strength, are practically the only symptoms of his illness. Urine has shown albumin and casts at every examination made during the past five years. "I attribute my disease to exposure, irregular meals, irregular hours."

Examination.—Patient a little pale and flabby, perhaps very slightly œdematous; otherwise a robust man. Heart, arteries and lungs normal.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, more than five years.
- b) As known from urine examination, five years.

Operation.—May 11, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys contracted to about three-fourths the normal volume by chronic interstitial inflammation. Surfaces, after removal of capsule, beefy red and granular.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Patient resumed a very large surgical practice immediately upon his return home after operation, and writes me that he has since worked harder than ever before. Under date of March 18, 1904, the doctor writes: "Increased elimination of solids followed operation immediately. At no time since have the solids been subnormal, always taking into account the diet at time of operation. Casts

have grown less, until at times scarce a single cast could be found on several plates.* Albumin a trace. Headaches have disappeared, practically ceasing during the week following operation. I feel well, and accomplish a large amount of work with no physical disturbance beyond such as a night's rest will adjust. The subjective symptoms of Bright's disease have disappeared."

"It is now nearly a year since I came to you, and there has not been a minute of the time in which I have had occasion to regret either my action or yours. In fact, it gives me great pleasure to thank you for the unwonted degree of health which I have enjoyed since leaving New York City."

"There is still abundant evidence of nephritis, as you will see from my last report. The operation of decapsulation does something beside relieving tension and increasing the blood supply. It seems to me to be a little too much to ask that any kidney affected with chronic interstitial nephritis shall entirely rejuvenate over wide areas of diseased tissue which will continue to produce casts and allow albumin to be a constant constituent of the urine. This is, to my mind, in no wise in conflict with the conception that the portions of the kidney unaffected should be stimulated to the extent which renders the total kidney output sufficient."

Last report, received May 30, 1904, affirms continuation of good general health.

Urine examinations have been made in this case to the number of some ten or twelve, five of which are appended.

CASE No. 59.—F. H. C., male, 47 years of age; weight, 73 kilograms.
Operation: May 11, 1903.

Date.	Amount of urine. in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
May 9, 1903. (before operation.)		1020		2.0%	10% by bulk, Heller.	Innumerable large and small hyaline and fine granular, occasional epitheliated. Occasional isolated pus cells.
June 27, 1903.	840 c. c.	1026	50.89 grams.	25.2 grams in 24 hours.	marked trace.	Frequent hyaline. Rarely a red cell. Occasional leucocyte. Rarely a renal cell.

* A comparison with our own examinations, as recorded in the appended table, will prove interesting as indicating the thorough and searching character of the examinations made by Prof. Brooks and Dr. Vincent.

Nov. 1, 1903.	1920 c. c.	1019	84.93 grams.	31.2 grams in 24 hours.	0.1%	Two hyaline on two slides. Cylindroids.
Jan. 27, 1904.	1500 c. c.	1016	55.92 grams.	18.0 grams in 24 hours.	trace.	Frequent hyaline. Occasional epitheliated hyaline. Innumerable mucous threads and cylindroids. Rarely an isolated red cell. Few leucocytes.
May 31, 1904.	1320 c. c.	1029	89.19 grams.	34.32 grams in 24 hours.	marked trace.	Rather frequent hyaline. Occasional fine granular. Occasional red cell and leuco- cyte.

Result.—Decided and satisfactory improvement in general health and in work of kidneys.

Case No. 60.

J. E. H., male, 22 years of age, single; patient of Dr. I. Taylor Ireys, Lakeside, San Diego County, California.

Family history.—Father, mother, three sisters and one brother living and well. One sister died at 20 of acute pulmonary tuberculosis following an attack of pneumonia.

History prior to operation.—Well up to March, 1902. Then headaches developed, becoming rapidly more frequent and violent. On June 20, 1902, violent headache, followed by nine uræmic convulsions in fifteen hours, accompanied by total blindness and loss of consciousness for three days. The blindness preceded unconsciousness by about one hour. Urine then examined and found solid with albumin. Since then, albumin and casts in every specimen of urine examined. Has suffered since from uræmic headaches, convulsions, eye symptoms, cardiac and vascular disturbances, dyspepsia, cold extremities, cold skin and dyspnœa; in fact, from practically every symptom of nephritis, except œdema and backache.

Examination.—Heart enlarged to about twice the normal size, with tumultuous action (galloping rhythm) and very strong apex beat; no murmurs. Slight arteriosclerosis. Left kidney normal in size, or a trifle large. Right kidney not distinctly palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year.
- b) As known from urine examination, eleven months.

Operation.—May 27, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney about three-fourths normal size. After stripping off capsule, kidney surface is found granular everywhere, with yellow mottling. Interstitial nephritis, with fatty degeneration. Left kidney a trifle large, markedly lobulated, with red and yellow mottling, and well marked fatty changes everywhere.

Diagnosis.—Right chronic interstitial, and left chronic diffuse nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—Under date of March 14, 1904, patient writes: "My former headaches have practically disappeared. There is decided improvement in strength and digestion, and the skin has rapidly assumed a healthy appearance. I consider myself wonderfully improved since the operation." From the urine examinations there appears to have been an acute exacerbation of chronic nephritis in April, 1904. The last report from patient, dated July 1, 1904, reads: "My health since last report has shown marked improvement, and I think I am in better condition now than at any time since my sickness. The outbreak that seemed to come over me a few weeks before leaving California seems to have gone, and I find myself much stronger and with far more healthy color in my face than for many months. I am not troubled with headaches or other symptoms of the disease, with the exception of my heart, which I think beats too strongly, although doctors say there is no chronic trouble there."

Urine examinations.—Number made, ten.

CASE No. 60.—J. E. H., male, 22 years of age; weight, 60 kilograms.

Operation: May 27, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Jan. 6, 1903. (4 months before operation.)	1740 c. c.	1018	72.95 grams.	29.58 grams in 24 hours.	0.2%	Large numbers granular and hyaline, and a number of epithelial. Considerable number of red blood cells and a moderate number of leucocytes. A moderate number of various epithelial cells.

May 26, 1903. (day before operation.)		1018		1.4%	0.5%	Innumerable hyaline. Many epitheliated hyaline and fine granular. Rarely a waxy. Frequent red blood cells. Occasional leucocyte. Occasional renal element.
June 1, 1903.	2150 c. c.	1012	60.11 grams.	30.1 grams in 24 hours.	0.3%	Innumerable fine and coarse granular, many with fat droplets. Many epitheliated. Few simple hyaline. Numerous red blood cells. Few leucocytes. Frequent renal cells.
June 15, 1903.	1550 c. c.	1010	36.11 grams.	24.8 grams in 24 hours.	0.25%	Numerous hyaline, granular and epitheliated. Few leucocytes. Frequent renal cells.
Feb. 15, 1904.	2040 c. c.	1013	61.79 grams.	4.08 grams in 24 hours.	0.7%	Numerous hyaline, hyaline epitheliated and granular. Occasional waxy and fatty. Few red cells. Few leucocytes. Occasional renal cell.
April 8, 1904.	2280 c. c.	1013	69.06 grams.	25.08 grams in 24 hours.	0.25%	Innumerable hyaline, epitheliated, fine and coarse granular, many partially fatty. Rarely a waxy. Many isolated red cells. Moderate number of leucocytes. Many renal cells, both from pelvis and tubules.
July 21, 1904.	1440 c. c.	1015	50.33 grams.	11.52 grams in 24 hours.	0.3%	Innumerable hyaline, granular and epitheliated. Occasional waxy and fatty. Moderately frequent isolated red cells. A few leucocytes. Many renal cells, some partially degenerated.

Result.—Exceedingly satisfactory as far as the patient's general health is concerned. The results of urine examinations since operation have fluctuated too greatly to permit of very definite deductions.

Case No. 61.

A. B., female, 44 years of age, single. Patient of Dr. J. Cowper Hannan, 2039 Washington Avenue, Bronx, New York City.

Family history unimportant.

History prior to operation.—Scarlet fever at two years, spinal meningitis at six years, and sciatica for three months at eleven years of age. Backaches, dorsal and lumbar, off and on ever since age of thirteen; never free from them for a year at a time. Four years ago was taken with attacks of severe pains in left lumbar region and left groin. These attacks gradually grew in intensity for five months, and then remained

stationary, as regards severity, until September, 1902. Then absolute relief for five months, until February, 1903, since when the condition has become re-established, and the pains, which come on paroxysmally, are as severe as ever. The attacks of pain are frequently accompanied by epigastric distress and nausea, and sometimes by vomiting. Four years ago, decided bladder symptoms went with the attacks; for a year past there has not been much vesical disturbance.

On March 9, 10, 12 and 15, 1902, skiagraphs were taken of the left lumbar and inguinal regions by Dr. Louis Weigel, of Rochester, N. Y., than whom I know of no greater expert in medical and surgical X-ray work. These skiagraphs showed the presence of three stones in the left ureter. The highest stone was situated just below the pelvic brim, the middle one was 4.5 centimeters distant from the upper, and the lowest stone was 2.5 centimeters distant from the middle stone. Each stone was oval, almost round; the long axis of each stone was on a line with that of the other stones and with the course of the ureter. The diameter of the short axis of each stone measured 1.25 centimeters. Several surgeons whom the patient consulted informed her that, owing to the position of the stones in the deep pelvic portion of the ureter, it would be impossible to remove them.

Examination.—Patient first came under my observation on April 17, 1903. Owing to extreme rigidity and sensitiveness of the abdominal walls, an examination was made under ether. Pelvic organs normal, except the left ureter, which was uniformly thickened, throughout its pelvic portion, to more than twice the diameter of the right ureter, which latter was normal. The presence of stones, however, could not be detected by the fingers. Right kidney movable eight centimeters; left kidney not palpable. Heart and lungs normal; slight tendency to arteriosclerosis.

At my suggestion, skiagraphs of the left lumbar and inguinal regions were made by Mr. E. W. Caldwell. These skiagraphs showed three stones or shadows, identical in size, situation, relative position to each other, and in every other particular, with those demonstrated by Dr. Weigel more than a year previously. Examination of the urine by Prof. Henry T. Brooks (see urine examination of June 17, 1903).

showed unmistakable chronic nephritis. The diagnosis of nephritis had not been previously made by any of the several physicians whom the patient had at various times consulted. The plan of procedure outlined, after due consideration, and accepted by the patient and her physician, embraced decapsulation of both kidneys, with fixation of the right kidney and exploration of the left kidney and of the upper portion of the left ureter at a first operation, to be followed by exploration of the lower portion of the left ureter and removal of the calculi at a second operation.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, four years.
- b) As known from urine examination, six weeks.

First Operation.—May 29, 1903, at my private hospital.

Decapsulation of right and left kidneys; fixation of right kidney; exploration of left kidney and of upper end of left ureter.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Moderate amount of right perinephritis in patches, especially at one point, 2.5 centimeters in diameter, where the underlying capsule and kidney tissue were also found slightly thickened and infiltrated. Right kidney otherwise healthy to touch and sight. Extensive left perinephritis, with some œdema of perirenal fat, especially around lower pole of kidney. Capsule proper removed in toto, together with a small piece of kidney tissue for microscopic examination. Left kidney increased in size from 25 to 50 per cent., hard and tense. Its surface was dark red, faintly mottled, and contained one or two pea-sized cysts. Exploration of the renal pelvis and of the upper seven centimeters of the left ureter showed these structures to be slightly and evenly thickened; there was no evidence of the dilatation which might be expected to be present as the result of obstruction further down the ureter.

Diagnosis.—Left chronic diffuse nephritis, confirmed by Professor Brooks, after microscopic examination of the piece of kidney tissue removed at operation. Right and left chronic perinephritis. Right kidney to all appearances, with the exceptions above noted, practically normal.

Convalescence uneventful. Primary union of both wounds.

A small hæmatoma followed in left wound and was evacuated on twelfth day after operation, without interfering with the healing process.

Second operation.—June 15, 1903, at my private hospital.

Exploration of entire length of left ureter. Incision of anterior abdominal wall, fifteen centimeters in length, parallel to, and two and a half centimeters distant from, left Poupart's ligament. Peritoneum reflected, and left ureter exposed along its entire length from bladder to kidney. Careful palpation and inspection, centimeter by centimeter, showed even thickening of the walls of the ureter along its entire length. No evidence of stone or obstruction. Careful and leisurely exploration and examination of all the structures contained in the left half of pelvis was next made, for the purpose of obtaining an explanation of the skiagraph shadows. Nothing, however, was found which would satisfactorily explain them. A few enlarged lymphatic glands found along the course of the inflamed ureter were removed, and the entire length of the ureter was dissected from the surrounding tissues, with a view to cutting off any extra blood supply, in the hope of thus diminishing the inflammation of the ureter. The diagnosis reached was left chronic diffuse nephritis, with left chronic ureteritis. The abdominal wound was closed for primary urine, without drainage.

Convalescence uneventful. Primary healing of wound.

History after operation.—Former pains entirely disappeared, and the patient's general health improved markedly, with a gain in weight of some nine kilograms, within six months after operation. In the early part of January, 1904, a skiagraph of the patient's pelvis was again taken by Mr. E. W. Caldwell, and gave exactly the same findings as the ones taken prior to operation by both Dr. Weigel and Mr. Caldwell. The "shadows," therefore, remain a mystery more than ever. Curiously enough, on learning that the skiagraph showed the same "shadows" after operation as before, the patient immediately had an attack of her old ureteral colic, the very first since operation. This occurrence was at first attributed to some nervous influence nearly as mysterious as the "shadows" themselves. The repetition of the attacks within the past two months, however, the attacks being accompanied by vomiting,

and the steady diminution of the urea output, makes it certain that they are again dependent upon an exacerbation of her chronic nephritis. At the present writing, July 1, 1904, the attacks are very severe, the uræmic symptoms are very pronounced, and the patient's condition is a source of much anxiety.

Urine examinations.—Number made, eighteen.

CASE No. 61. A. B., female, 44 years of age; weight, 55 kilograms.

Operation: May 29, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
April 17, 1903. (before operation.)		1020		3.2%	5% by bulk, Heller.	Small number hyaline and fine granular. Occasional epithelial and mixed (blood). Innumerable isolated blood cells. Occasional isolated pus cells.
June 8, 1903.	1050 c. c.	1014	34.25 grams.	15.75 grams in 24 hours.	faint trace.	Few hyaline. Occasional epithelial hyaline and granular. Several typical waxy. Numerous isolated red cells. Numerous pus cells, mostly the small mononuclear.
Oct. 27, 1903.		1012		0.5%	none.	No casts. Rather frequent isolated blood cells, and few small masses. Few leucocytes.
Dec. 26, 1903.		1016		0.5%	none.	Occasional hyaline. Rarely a red blood cell. Few leucocytes.
March 12, 1904.	900 c. c.	1019	39.84 grams.	7.2 grams in 24 hours.	none.	None.
May 7, 1904.	1200 c. c.	1018	50.33 grams.	4.8 grams in 24 hours.	faint trace.	None.
June 11, 1904.	1600 c. c.	1015	55.89 grams.	6.4 grams in 24 hours.	faint trace.	Very rarely a hyaline. Many mucous threads, some with epithelial cells attached.

Result.—Satisfactory progress and improvement in patient's general health and in condition of urine for eight or nine months following operation. Relapse during the past three or four months, with pronounced and ominous indications of chronic uræmia.

Case No. 62.

S. B., male, 46 years of age, married. Patient of Dr. M. Goltman, Randolph Building, Memphis, Tenn.

Family history irrelevant.

History prior to operation.—On May 24, 1903, I received the following telegram, dated Memphis, Tenn.: "Mr. B. has had chronic Bright's disease about ten years. Now has much albumin, passes little urine, has slight dropsy, fatty, epithelial and other casts, and cardiac dilatation, with very little irregularity. Wants operation if it offers him a chance. Normal weight about one hundred and thirty; now weighs about one twenty. Arterial system good." Signed, Dr. M. Goltman. On May 28, Dr. G. started for New York with his patient. In the early morning of the 30th, on the train, a few hours from New York, a sudden extensive blood infarction of the right lung nearly led to instant death. Patient spat up a great deal of blood and went into collapse, the temperature dropping to 95.5° F. He was kept alive only with great difficulty by Dr. G., and was brought to my private hospital about noon of May 30 in practically moribund condition. Operation for the time being was out of the question.

According to the history kindly furnished by Dr. Goltman, patient had chronic Bright's disease for the past ten years, judging from symptoms. Albuminuria first noted three years ago. Patient came under Dr. G.'s care on April 29, 1903; back-aches and œdema being at the time the chief complaints. On May 14, 1903, violent and uncontrollable hiccough, nausea and severe uræmia developed, all of which, with rapidly increasing dropsy, he brought with him to New York.

After four days of general treatment by Drs. Goltman and A. Caillé, Dr. G. urged operation and the patient clamored for it. Bedsores had meantime developed over the sacrum, while the lower extremities and the body had become œdematous to the extremest degree, and the lungs appeared to be slowly clearing. Under these circumstances, seeing no possibility of further bettering the patient's general condition, operation was performed on June 4, 1903.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, ten years.
- b) As known from urine examination, three years.

Operation.—June 4, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—The right kidney, normal in size and consistence, presents the characteristic fine red and yellow mottling over entire surface after removal of capsule. Left kidney normal in size, or a trifle large; slightly hard; beef red in color. Mottling decided, but not so marked as in right kidney.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence eventful (see history since operation). Both wounds healed by primary union. Drainage with a few strands of silkworm for three days on account of œdema. The extreme œdema of back stretched the skin so tightly that it parted over the right wound on the tenth day. The left incision was preserved from the same fate by extra tension sutures.

History since operation.—Patient rallied unexpectedly well. The kidneys resumed work at once with energy, and within the first two weeks after operation never less than the normal amount of urea, and sometimes double the normal amount, was excreted daily. The albumin and casts rapidly diminished. In three weeks all œdema had entirely disappeared. In the meanwhile, however, in spite of the use of an air mattress, five or six bedsores had developed on different parts of the back and buttocks, so low was the patient's general vitality. About three weeks after operation the temperature began to rise, and exploratory puncture disclosed the fact that the blood effusion into the right pleura was breaking down into pus. Subperiosteal resection of four centimeters of the eighth rib posteriorly was performed under gas and ether anæsthesia on June 30, 1903, and a liter of the foulest-smelling blood and pus was evacuated from the right pleural cavity. With daily irrigation the abscess cavity and the wound finally healed. On my return from my summer vacation I found the patient so greatly changed for the better that I scarcely recognized the invalid I had left two months previously. All wounds and bedsores had healed; the patient looked the picture of health, and felt correspondingly. The urine was fast approaching a normal condition, and the patient

left for his home on October 4, 1903, a happy man.

For the further after-history I am again indebted to Dr. Goltman. Improvement was steady and continuous until about the middle of November, 1903, when indications of an exacerbation of chronic nephritis became manifest. Improvement in the condition of the urine again manifested itself in January, 1904. In the second week of February, 1904, the patient and his entire family were prostrated with epidemic influenza. Gradual failure of the heart, dyspnœa, pulmonary œdema, general dropsy and uræmia developed, and the patient passed away on February 28, 1904.

Urine examinations were made in large number, probably thirty or more.

The following record is copied from Dr. Goltman's account of the case, as published in the Memphis Medical Monthly for January, 1904, on page 4: "Urine before operation—Total quantity, 540 c. c.; sp. gr. at 80 deg. F. (weighed), 1032; total solids, 7.14; chlorides, 2.2; urea, 4.7 (diluted with 3 volumes of water); serum albumin, 18 per cent. vol.; white cells, numerous; sugars, none; epithelia, many, round and pavement; casts, all kinds, large and small."

CASE No. 62.—S. B., male, 46 years of age; weight, 50 kilograms.
Operation: June 4, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea. in 24 hours.	Albumin.	Renal casts.
June 3, 1903. (before operation.)						Immense numbers of all kinds, hyaline, granular, epitheliated, epithelial, fatty and waxy. Renal elements in great abundance. Many red blood cells.
June 7, 1903.	1800 c. c.	1016	67.1 grams.	50.4 grams.	no notc.	Marked change in relative numbers of hyaline and granular casts. At examination of June 3, the number of plain hyaline casts was very small, that of the granular and fatty very large. To-day the plain hyaline represent probably one-fourth, the slightly epitheliated and degenerated another fourth, while the granular and fatty, with a few waxy, make up the balance. The total number of casts is about the same or perhaps a trifle less. The renal cells are apparently as abundant as before. Red blood cells fairly frequent.

June 14, 1903.	1100 c. c.	1014	35.88 grams.	25.3 grams.	marked trace.	Many hyaline and hyaline epitheliated. Few granular. Rarely a waxy. Few red cells. Few leucocytes. Numerous renal cells.
July 28, 1903.	1500 c. c.	1013	45.44 grams.	19.5 grams.	trace.	Rather frequent hyaline. Occasional epitheliated and fine granular. Occasional pus cell. Rarely a renal cell.
Sept. 4, 1903.	2000 c. c.	1012	55.92 grams.	22.0 grams.	none.	Fairly frequent hyaline. Occasional epitheliated hya- line. Rarely a fine granular. Rarely an isolated red cell. Occasional leucocyte.
Sept. 18, 1903.	1500 c. c.	1010	34.95	18.0 grams.	none.	Occasional hyaline. Rarely an epitheliated hyaline. Rarely a red cell and leuco- cyte.
Jan. 13, 1904.	660 c. c.	1034	52.29 grams.	13.86 grams.	25% by bulk, Heller.	Innumerable hyaline. Many hyaline becoming finely granular, few hyaline epitheliated Rarely a true granular. Rarely a red blood cell and renal element. Moderately frequent leuco- cytes (exacerbation or new at- tack beginning Nov. 25, 1903, and now on the wane).
Feb. 25, 1904. (three days be- fore death).	630 c. c.	1028	41.1 grams.	8.19 grams.	marked ring.	Frequent hyaline, a few epi- theliated. Occasional granular. Very rarely a renal cell. A few isolated red cells and leucocytes.

Result.—Rescue of patient from impending death, and a gain of life of nearly nine months, must in all fairness be ascribed to the operation in this case. A considerable part of the nine months, in addition, was lived in a condition of health perfectly satisfactory to the patient and his family. The patient's death, on February 28, 1904, nearly nine months after operation, was brought about directly by an attack of influenza, the ravages of which upon heart, lungs and kidneys these already diseased organs were unable to withstand.

Case No. 63.

M. M., female, 63 years of age, widow. Patient of Dr. James R. Wood, 43 West 19th Street, New York.

Family history unimportant.

History prior to operation.—Considered herself well until about six months ago. Since then, pains and weakness in lower back, radiating upward along spine, numbness of lower extremities, general weakness, bloating, constipation, loss of strength and weight (from 61 kilograms to 50 kilograms), and some swelling of feet in the evening.

Examination.—Worried and troubled expression, with marked anæmia. Slight swelling of feet. Heart normal. Pronounced arteriosclerosis; high-tension pulse. Right kidney slightly movable; left kidney in place.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one year.
- b) As known from urine examination, six months.

Operation.—June 10, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney normal in size; left kidney slightly large. Surfaces of both kidneys, after removal of capsule, everywhere studded with small granulations interspersed with numerous islands of fatty degeneration.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary healing of both wounds.

History since operation.—Patient continued to suffer from mental depression and a variety of nervous symptoms, although the condition of her urine for a time kept steadily and satisfactorily improving. A prolapse of the rectum, which occurred after operation, caused considerable distress and suffering. Patient died of a complication of conditions, including uræmia, on March 7, 1904.

Urine examinations.—Four were made, records of which are appended.

CASE No. 63.—M. M., female, 63 years of age; weight, 50 kilograms.

Operation: June 10, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urca.	Albumin.	Renal casts.
June 3, 1903 (before operation.)		1010		1.3%	tracc.	Numerous large and small hyaline and finely granular; occasional epithelial and mixed. Pus cells in very large number, isolated and in masses. Large number renal cells.
June 14, 1903.	860 c. c.	1017	34.06 grams.	23.22 grams in 24 hours.	trace.	Numerous hyaline, granular and epithelial; rarely an epithelial; rather frequent waxy. Frequent red cells. Quite numerous pus cells, singly and in small clumps. Large amount of renal epithelium.

Oct. 10, 1903.		1018		1.2%	distinct trace.	Numerous hyaline. Many granular, some showing fat droplets. Rarely a waxy. Rarely an isolated blood and pus cell. Occasional renal cell.
Jan. 22, 1903.	1000 c. c.	1030	69.9 grams.	20.0 grams in 24 hours.	trace.	Fairly frequent hyaline. Rarely an isolated red cell. Few leucocytes. Very rarely a renal cell.

Result.—Temporary improvement in urine without any improvement in general health, the latter due, in part at least, to complicating diseases not connected with the nephritis. Death from a complication of conditions, including uræmia, on March 7, 1904, ten months after operation.

Case No. 64.

B. A., male, 36 years of age, single. Patient of Dr. Constantine J. MacGuire, 120 East 60th Street, New York.

Family history not relevant.

History prior to operation.—Patient felt perfectly well until March, 1902, when he was taken with pains all over body, headaches, and some derangement of digestion. In May, 1902, albumin and casts were discovered in the urine, and examination of the eyes showed retinitis albuminurica. Backaches, general pains, digestive disturbances, headaches, loss of strength and weight, defective vision, occasional puffiness of face and swelling of hands, have been the chief symptoms during the past year. A year ago weighed 130 kilograms; present weight, 88 kilograms. Frequent and copious nose-bleed during the past year, on one occasion requiring plugging of anterior and posterior nares.

Examination.—Puffy and pallid face of chronic Bright's disease. Moderate bronchitis. Heart in good condition. High-tension pulse and manifestations of an impending attack of uræmia. Neither kidney palpable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, one and a half years.
- b) As known from urine examination, thirteen months.

Operation.—June 22, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Chronic perinephritis on both sides. Kidneys about normal in size; surfaces beef

red, with faintly yellowish mottling, after removal of capsule.

Diagnosis.—Right and left chronic diffuse nephritis.

History after operation.—Patient had slight uræmic twitchings while on the operating table, and took the anæsthetic very badly, proving combative and unmanageable for nearly an hour after operation. At the end of the hour he quieted down, the pulse returning to 82, full, soft and regular. Five hours later sudden acute dilatation of the heart occurred, and was immediately followed by pulmonary œdema and death.

Urine examination.—Two records of examinations, made before operation, are in my possession. One, dated the day before operation, gives: Total quantity passed, 800 c. c.: specific gravity, 1.017; total solids, 31.69; albumin, 0.2 per cent.; urea, 14.4 grams; innumerable hyaline, epitheliated, and occasional fine granular and epithelial casts; many renal cells.

Result.—Death from acute dilatation of the heart and pulmonary œdema, six hours after operation.

Case No. 65.

W. J. D., male, 27 years of age, single. Patient of Dr. D. W. Evans, 217 N. Main Avenue, Scranton, Pa.

Family history not pertinent.

History prior to operation.—Considered himself quite well up to two and a half years ago. Since then, headaches, loss of strength, backaches, general aching, nausea and vomiting, swelling of feet, body, hands and face, have been the chief complaints. Uræmic convulsions, with complete loss of consciousness for five days, in February, 1903. Retinitis albuminurica, causing almost total blindness, since March, 1903.

Examination.—Extreme pallor and cachexia. Dropsy of feet, abdomen, chest walls, hands and face. Right pleural cavity nearly filled with effusion. Heart enlarged to twice the normal size, with tumultuous, rippling, feeble action; 1,500 c. c. of fluid were drawn by aspirator from right pleura on day preceding operation, with resultant improvement of heart's action. Patient cannot see sufficiently to find his way about alone. Professor Caillé, in consultation, advises operation.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, three years.
- b) As known from urine examination, one year.

Operation.—June 22, 1903, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Moderate amount of chronic perinephritis, and considerable œdema of perirenal fat on either side. Both kidneys a little undersized. Capsules thin and rather firmly adherent. Kidneys granular over entire surface, with extensive fatty degeneration and very slight bleeding on stripping off capsule.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful, except for uræmic manifestations. Primary healing of both wounds.

History after operation.—Patient profoundly uræmic at operation. Uræmic headaches relieved for three weeks after operation; otherwise no evidence of improvement.

Urine examinations.—Five or six examinations were made, but the records have all been mislaid.

Result.—No improvement worth speaking of. Death from uræmia on September 14, 1903, three months after operation.

Case No. 66.

F. S., male, 50 years of age, married. Patient of Dr. A. Waechter, 216 E. 12th Street, New York, and Dr. A. Caillé, 753 Madison Avenue, New York.

Family history not pertinent.

History prior to operation.—Considered himself well up to February, 1903, when he began to notice dyspnœa on slight exertion. Dyspnœa has kept steadily increasing to date, and is now extreme. Dropsy of feet since April, 1903; dropsy of face and hands since June, 1903.

Examination.—Patient a short, very fat man; height, 167 centimeters; weight, 91 kilograms. Puffiness of face; dropsy of legs, trunk, and upper extremities. Extreme dyspnœa, being unable to breathe in the recumbent posture. Fatty degeneration and dilatation of heart; extremely feeble sounds, but no murmur.

Existence of chronic Bright's disease prior to operation:

a) As indicated by symptoms, one year.

b) As known from urine examination, five months.

Operation.—July 6, 1903, at my private hospital.

Decapsulation of both kidneys.—The patient could not be placed in the usual position on kidney cushion, being too extremely fat and round. In addition, it was found that he could not breathe in the prone position. He was postured first on one side, then on the other, with a nurse each lifting the uppermost leg and arm so as to render breathing possible. The operation had to be interrupted several times to revive patient. It proved altogether the most difficult kidney operation I have undertaken.

Anæsthetic.—Nitrous oxide, followed by ether, then by chloroform. Dr. Thos. L. Bennett, who administered the anæsthetic, found the change from ether to chloroform necessary on account of œdema of the lungs beginning during the exhibition of ether.

Condition of kidneys at operation.—Both kidneys normal in size; surfaces mottled, beef red, and glossy after removal of capsules.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence complicated by constantly threatening heart failure.

Urine examinations.—Four records are in my possession. On July 5, 1903, the day before operation: 400 c. c. of urine in 24 hours; specific gravity, 1.017; total solids, 15.84 grams; albumin, trace; urea, 6.8 grams in 24 hours; fairly frequent hyaline and hyaline epitheliated casts. Last examination, made July 22, 1903: 1,000 c. c. in 24 hours; specific gravity, 1.014; total solids, 32.62 grams; albumin, distinct trace; urea, 16.0 grams in 24 hours; hyaline, hyaline epitheliated, and granular casts.

Result.—Death on July 26, 1903, twenty days after operation, from heart failure and pulmonary œdema.

Case No. 67.

M. G. V., female, 38 years of age, single. Patient of Dr. Eugene Fuller, 252 Lexington Avenue, New York.

Family history irrelevant.

History prior to operation.—Very severely ill at twelve years of age. Backache, rheumatic and neuralgic conditions all her life. Ten years ago her right kidney was anchored and, as Dr. Fuller informs me, the capsule was not disturbed, the

wound was packed with gauze and healing by granulation was sought and attained. Chronic nephritis was known to exist at the time of this operation, ten years ago, and has existed and grown worse ever since. Swelling of feet, face and hands first occurred ten years ago, and has persisted in greater or less degree ever since. Uræmic headaches, backaches, turbulent action of the heart and very frequent and severe attacks of pulmonary œdema constitute the other complaints.

Examination.—Patient pale and worn, with evidences of long ill health written all over her. Moderate hypertrophy of heart, with galloping rhythm and marked arterial tension. Very marked general arteriosclerosis. No valvular murmurs.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, twelve years.
- b) As known from examination of urine, ten years.

Operation.—July 7, 1903, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney firmly anchored to anterior face of quadratus lumborum muscle, high up, by a strong, fibrous band 1.5 centimeter thick and 3 centimeters long. Capsule proper somewhat thickened and firmly adherent. The capsule was removed from the entire surface of the kidney, except where the fibrous band arose from the organ, thus leaving the anchorage entirely undisturbed. Right kidney a little undersized and typically granular, after removal of capsule. Much chronic left perinephritis. Left kidney about normal in size, faintly granular and distinctly mottled in dark and light red colors. A small piece of left kidney came away with capsule and was examined microscopically by Prof. Brooks, who pronounced it a case of chronic diffuse nephritis, with parenchymatous involvement predominating.

Diagnosis.—Right chronic interstitial nephritis and left chronic diffuse nephritis. Diagnosis, in case of left kidney, confirmed by microscope.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Patient is gradually, although slowly, improving in general health, while the condition of the urine is rapidly changing for the better.

Urine examinations were made to the number of twelve.

CASE No. 67.—M. G. V., female, 38 years of age, single; weight, 55 kilograms.

Operation: July 7, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
July 6, 1903. (before operation.)		1020		2.2%	25% by bulk, Heller.	Innumerable, all kinds except waxy and pure pus. Occasional isolated blood and pus cells. Frequent renal epithelia.
Jan. 14, 1904.	2100 c. c.	1020	97.86 grams.	33.6 grams in 24 hours.	0.2%	Frequent hyaline. Few hyaline epitheliated. Many mucous threads and cylindroids. Occasional red cell. Few leucocytes.
April 10, 1904.	1000 c. c.	1020	46.6 grams.	23 grams in 24 hours.	marked ring.	Many hyaline, mostly of the small variety, some of them epitheliated. Occasional red cell. Rather frequent leucocytes.

Result.—Satisfactory improvement in general health and in health of kidneys.

Case No. 68.

J. D., female, 16 years of age, single. Patient of Dr. James R. Wood, 43 West Nineteenth Street, New York.

Family history not relevant.

History prior to operation.—Measles at age of eight. Headaches for past two years. Vomiting on an average of two or three times a week, and other stomach disturbances, for a year past. In August, 1902, she was operated upon for chronic appendicitis by another surgeon. Chronic nephritis was discovered by uranalysis at the time of the appendicitis operation. Uræmic symptoms have been very pronounced during past year. Swelling of feet and urgent dyspnœa have existed for a month past.

Examination.—Extreme pallor and slight puffiness of face. Moderate œdema of feet. Heart hypertrophied to nearly twice the normal size. Systolic bruit over apex. Both kidneys movable, right ten centimeters, and left five centimeters.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, fourteen months.

Operation, October 5, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Right kidney contracted to one-half the normal size, lobulated, very granular on surface, and almost fibrous to touch. Left kidney normal in size, with fatty mottling, slightly hard, but not granular.

Diagnosis.—Right chronic interstitial and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation. Patient began to improve at once, both as regards her general health and her urine. Headaches, dyspnœa and digestive disturbances disappeared. The improvement was interrupted towards the end of December, 1903, by a severe attack of grippe, which was complicated by an acute exacerbation of her chronic nephritis and by a fresh involvement of the heart. During December, 1903, she also suffered transiently from œdema of the lungs. In February, 1904, an extensive gangrene of the left tonsil and of the soft palate developed. The slough was thrown off, but the necrotic condition continued, and the patient died from exhaustion, on February 20, 1904.

Urine examinations.—Number made, six.

CASE No. 68.—J. D., female, 16 years of age; weight, 50 kilograms.

Operation: October 5, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Sept. 29, 1903. (before operation.)		1012		1.0%	25% by bulk, Heller.	Frequent hyaline. Occasional epitheliated hyaline. Rarely a waxy. Innumerable blood cells, isolated and in masses. Corresponding number of leucocytes. Occasional renal element.
Oct. 4, 1903. (before operation.)		1010		0.9%	0.6%	Frequent hyaline and epitheliated hyaline. Rather frequent granular. Occasional waxy. Numerous red cells. Occasional renal cell.
Oct. 13, 1903.	1300 c. c.	1011	33.32 grams.	13.0 grams in 24 hours.	0.4%	Frequent hyaline. Occasional granular. Numerous isolated red cells. Few renal epithelia.
Oct. 25, 1903.	1200 c. c.	1008	22.37 grams.	10.8 grams in 24 hours.	0.6%	Rather numerous hyaline. Rather numerous red cells. Rarely a renal cell.

Dec. 26, 1903.	2040 c. c.	1014	66.54 grams.	24.48 grams in 24 hours.	0.7%	Hyaline, granular, fatty, waxy and hyaline epitheliated in abundance. Moderately frequent isolated blood cells. Few leucocytes. Numerous renal cells, mostly with fatty changes. "Acute exacerbation due to an attack of grippe."
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Result.—Satisfactory progress in general health and condition of urine until interrupted two and a half months after operation by an attack of the grippe. Partial recovery from the effects of the grippe was followed by sloughing of the left tonsil and of the soft palate. Death from exhaustion due to these conditions, on February 20, 1904, four and a half months after operation.

Case No. 69.

F. J. H., male, 27 years of age, married. Patient of Dr. George McNaughton, 479 Clinton Avenue, Brooklyn, N. Y.

Family history good. Father, mother, two brothers and one sister, all alive and in good health.

History prior to operation.—Well up to April, 1902, when he contracted a severe cold, which was followed by acute nephritis. Was accepted for life insurance in April, 1901. Since April, 1902, constantly albumin and casts in urine. A second acute attack of nephritis, in December, 1902. General œdema during both acute attacks, and constant œdema of face for a year past. Dyspnœa and rapid loss of strength the only other symptoms.

Examination.—Patient very anæmic, with puffed face and the characteristic pallor of chronic Bright's disease. Lungs normal. Heart markedly hypertrophied; galloping rhythm; no murmur. Marked arterial changes and high-tension pulse. Neither kidney palpable. Patient first consulted me with reference to operation on July 6, 1903, but for several reasons postponed operation until October. In the intervening three months he grew decidedly weaker and more anæmic. Feet again swollen.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, one and a half years.

Operation, October 17, 1903, at Post Graduate Hospital.

Decapsulation of both kidneys.—Capsule on each side composed of two distinct layers, the outer of which only could be removed.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Both kidneys enlarged about thirty per cent., and a little hard. Right kidney beef red and left kidney fatty in appearance.

The capsule proper of each kidney was found to consist of two layers, both thin and very friable. The outer layer was completely detached from the inner and entirely removed. All attempts to detach the inner layer proved futile, only very small bits of the thin filamentous layer coming away, and always bringing with it a minute piece of kidney tissue. The union between inner layer and kidney was firmer than the kidney tissue itself.

Diagnosis.—Right and left chronic parenchymatous nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation. There has been no improvement in the condition of the urine, but rather the contrary, as will be seen from the appended records. Patient, however, returned to work and writes, on January 17, 1904: "I am feeling in pretty good shape and enjoy work once more." On the occasion of his last call at my office, on May 21, 1904, the following notes were made: "Patient states that he does not feel sick in any way, is getting stronger, and never misses a day of work. Dropsy has entirely disappeared, and his weight has increased from 58 to 64 kilograms. The heart's action has greatly improved, and dyspnœa is no longer complained of. Color still pale, due possibly to constant indoor occupation."

Redecapsulation, in the hope of removing the inner layer of the old capsule with the new capsule formed after the first operation, offered the patient in case the urine does not soon show improvement. At the present writing, however, the patient is entirely contented with his general state of health, and in view of the fact that he is able to do a full day's work six days of the week, he is not ready to entertain the idea of another operation.

Urine examinations were made to the number of thirty.

CASE No. 69.—F. J. H., male, 27 years of age; weight, 61 kilograms.

Operation: October 17, 1903.

Date.	Amount of urine. in 24 hours.	Spec. grav.	Total solids in 24 hours.	Total urea in 24 hours.	Albumin.	Renal casts.
July 6, 1903. (before operation).	1500 c. c.	1017	59.4 grams.	24.0 grams.	over 50% by bulk, Heller.	Innumerable of all kinds, except waxy. Chiefly granular, epithelial and fine fatty. Rarely an isolated blood cell. Occasional isolated pus cell. Numerous granular renal epithelia.
Oct. 18, 1903. (before operation.)	1000 c. c.	1015	34.95 grams.	12.0 grams.	6.0 grams. in 24 hours.	Same findings as on July 6, 1903.
Oct. 29, 1903.	2700 c. c.	1016	100.65 grams.	43.2 grams.	14.85 grams in 24 hours.	Findings practically same as as on July 6, 1903, and October 18, 1903.
Dec. 17, 1903.	2730 c. c.	1020	127.21 grams.	8.19 grams.	More than albuminometer will measure	Numerous hyaline and hyaline epithelial. Enormous number of coarse granular, many having fat droplets. Few waxy. Occasional red cell. Few leucocytes. Many renal cells, most of them showing fatty changes.
Jan. 31, 1904.	3420 c. c.	1017	145.47 grams.	11.97 grams.	27.36 grams. in 24 hours.	Numerous hyaline, granular and epithelial. Many fatty and occasional waxy. Occasional red cells. Few pus cells. Many renal cells.
May 22, 1904.	2010 c. c.	1018	84.3 grams.	18.9 grams.	16.08 grams. in 24 hours.	Innumerable coarse granular, fatty and hyaline. Many epithelial and waxy. A few red cells and leucocytes. Many renal cells and much epithelial debris.
July 11, 1904.	2160 c. c.	1015	75.49 grams.	17.28 grams.	0.45%	Innumerable hyaline, fine and coarse granular; some fatty; a few waxy. Many renal cells, some showing degenerative changes.

Result.—Unsatisfactory. Although the patient's general health appears greatly improved, the condition of the urine holds out but little hope of a good final result.

Case No. 70.

J. M. L., male, 45 years of age, married. Patient of Dr. T. P. Whaley, Charleston, S. C.

Family history.—Father died at 62, of congestion of the lungs. Mother and seven brothers and sisters, all alive and in fair health.

History prior to operation.—Four years ago had an attack

of "hemorrhagic fever," *i. e.*, pernicious malarial fever. Albuminuria was then discovered by Dr. Whaley. Refused life insurance a year ago. Formerly suffered from headaches; at present only mild occipital headache. These headaches and the persistence of albuminuria the only causes of worry; no other decided symptoms, except some loss of strength and power of endurance.

Examination.—Heart and blood vessels in good condition. Patient a little sallow; otherwise looking fairly well. Acute bronchitis of two weeks' standing.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, five years.
- b) As known from urine examination, four years.

Operation, October 29, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and chloroform.

Condition of kidneys at operation.—Both kidneys in about same condition; one-half the normal size, of normal density, with beef red and dark red mottling of surface after removal of capsule. No indications of much interstitial tissue involvement; congenitally small kidneys.

Diagnosis.—Right and left chronic diffuse nephritis affecting congenitally small kidneys.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Under date of May 27, 1904, the patient writes that he feels well; that his energy and endurance are normal; that he has gained six kilograms in weight since operation; and that his former headaches have entirely disappeared.

Urine examinations.—Number made, eight.

CASE No. 70.—J. M. L., male, 45 years of age; weight, 79 kilograms.

Operation: October 29, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Total urea. in 24 hours.	Albumin.	Renal casts.
Oct. 25, 1903. (before operation.)	1350 c. c.	1016	50.33 grams.	22.95 grams.	0.3%	Numerous large and small hyaline, fine granular, and epithelial. Occasional finely fatty. Occasional isolated blood cell. Occasional leucocyte and renal element.

Nov. 8, 1903.	2500 c. c.	1016	93.2 grams.	27.5 grams.	0.2%	Frequent hyaline, many of them epitheliated. Occasional granular. Numerous red blood cells. Occasional leucocyte and re- nal element.
Nov. 17, 1903.	1800 c. c.	1020	83.88 grams.	23.4 grams.	0.2%	Rather frequent hyaline and granular. Occasional waxy. Occasional red cell, leucocyte and renal element.
Jan. 25, 1904.	1590 c. c.	1020	74.09 grams.	23.85 grams.	0.25%	Frequent hyaline, occasional epitheliated, and rarely a fine granular. Frequent isolated red blood cells. Few leucocytes.
June 1, 1904.	1530 c. c.	1018	64.17 grams.	7.65 grams.	0.3%	Rather frequent hyaline. Occasional granular. Many red cells. Occasional leucocyte.

Result.—Improvement in general health and in condition of urine.

Case No. 71.

R. H. H., male, 24 years of age, student of medicine, single. Patient of Dr. Andrew J. Hall, 709 Main Street, Natchez, Miss.

Family history.—Patient is an only child. Father and mother living and well.

History prior to operation. Malaria in summer of 1902. In January, 1903, a severe headache. In February, 1903, during a course in uranalysis, examined his urine and found albumin and hyaline casts. Albumin was present at every examination since, though sometimes in minimal quantities; casts were not always found. High-tension pulse, uræmic headaches, greatly impaired digestion, and loss of more than 11 kilograms in weight since February, 1903. Patient has always been a very excessive eater.

Examination.—Tall, lank youth, 1.85 meters high; weight, 56 kilograms. Complexion very sallow and unhealthy. Heart moderately hypertrophied, with occasional systolic bruit at apex. Right kidney movable, six centimeters. Left kidney palpable, not movable.

Existence of chronic Bright's disease prior to operation:

- a) As indicated by symptoms, two years.
- b) As known from urine examination, eight months.

Operation, November 2, 1903, at Post Graduate Hospital.

Decapsulation of both kidneys.

Anæsthetic.—Nitrous oxide and ether.

Condition of kidneys at operation.—Capsules of both kid-

neys adherent with unusual firmness; suspicion of a well defined, thin inner layer of capsule of left kidney. Both kidneys in about same condition, a trifle large, with distinct light and dark red mottling of surface everywhere.

Diagnosis.—Right and left chronic diffuse nephritis.

Convalescence uneventful. Primary union of both wounds.

History since operation.—Did not see the patient after operation until the end of May, 1904, when I failed entirely to recognize him, so complete was the transformation in his appearance. He looked the picture of perfect, rugged health, and felt accordingly. All his old symptoms had disappeared, and, as far as his feelings were concerned, he considered himself entirely well. Hypertrophy of heart less than before operation; murmur has disappeared.

Urine examinations.—Total number made, twenty-eight.

CASE No. 71.—R. H. H., male, 24 years of age; weight, 56 kilograms.

Operation: November 2, 1903.

Date.	Amount of urine in 24 hours.	Spec. grav.	Total solids in 24 hours.	Urea.	Albumin.	Renal casts.
Oct. 29, 1903. (before operation.)		1019		1.0%	20% by bulk, Heller.	Occasional large dense hyaline and epithelial. Rarely an isolated leucocyte.
Nov. 5, 1903.	2700 c. c.	1024	150.97 grams.	89.1 grams in 24 hours.	trace.	Large numbers hyaline and granular. Note remarkable output of urea and solids three days after operation.
Jan. 6, 1904.	2100 c. c.	1006	29.36 grams.	6.3 grams in 24 hours.	faint trace.	Rarely a hyaline. Very rarely an isolated red blood cell. Occasional leucocyte.
Jan. 22, 1904.	1880 c. c.	1011	48.18 grams.	16.92 grams in 24 hours.	trace.	Occasional hyaline. Rarely a blood cell. Occasional leucocyte.
March 16, 1904.	1920 c. c.	1009	40.26 grams.	5.76 grams in 24 hours.	faint trace.	Rarely a hyaline. Occasional red cell and leucocyte. (Patient has lived on an exclusively vegetable diet during the past three months.)
June 2, 1904.	1320 c. c.	1018	55.36 grams.	19.8 grams in 24 hours.	faint trace.	Very rarely a hyaline. Few red cells. Occasional leucocyte.

Result.—Satisfactory improvement in patient's general health and in urine.

Case No. 72

J. A. D., male, 34 years of age, married. Patient of Dr. Wm. T. McMannis, 320 West 45th Street, New York.

Family history not pertinent.

History prior to operation.—Always rheumatic and subject to sciatica. With this exception, considered himself well until February, 1902. At that time suffered from severe occipital headaches, and urine examination showed albumin and casts, which have been present at each of numerous examinations made since. Severe attack of uræmia in February, 1903. Occipital headaches on and off ever since. Slight œdema of feet for past three months. On November 27, 1903, ophthalmoscopic examination showed advanced retinitis albuminurica, judged to have existed for six months past. An examination made in June, 1902, nearly a year and a half previously, was negative as regards retinitis. The patient has been entertaining the idea of having his kidneys decapsulated for nearly two years, ever since he realized that he had chronic Bright's disease, his first physician having called his attention to and advised the operation. But much professional advice, pro and con, mostly con, kept him in doubt, and delayed the operation until it was too late to expect much benefit therefrom. Within a few days of the day of operation, one of two physicians whom he consulted said he believed in the operation, but that his case was too far advanced for operation; while the other advised him to wait a while longer, and if no improvement came, to have the operation. One considered his case too far advanced, the other not far enough advanced for operation. Under the circumstances he took the decision into his own hands and requested that decapsulation be performed.

Examination.—Patient stout, flabby-looking, and presenting the characteristic complexion of advanced chronic Bright's disease. Moderate œdema of feet. Œdema of lower posterior portion of right lung. Hypertrophy of heart; no murmur. High tension pulse and moderate arteriosclerosis.

Existence of chronic Bright's disease prior to operation:
a) As indicated by symptoms, three years.
b) As known from urine examination, one year and nine months.

Operation, December 5, 1903, at my private hospital.

Decapsulation of both kidneys.

Anæsthetic.—Chloroform.

Condition of kidneys at operation.—Both kidneys contracted to two-thirds their normal size by interstitial inflammation, and typically granular over entire surface after removal of capsules.

Diagnosis.—Right and left chronic interstitial nephritis.

Convalescence uneventful. Primary union of both wounds.

History after operation.—No marked change of any kind noted, except disappearance of œdema.

Urine examinations.—Ten records are in my possession. One made September 16, 1903, ten weeks before operation, reads: Amount of urine in 24 hours, 3,360 c.c.; specific gravity, 1009; albumin, 2.5 per cent. by weight; urea, 25.4 grams in 24 hours; very many hyaline, epithelial, granular and fibrinous casts; some blood, pus, and renal cells. There was at no time any very decided change from the above record, except that the daily urea output, which increased to 40.0 grams in about a week after operation, began to lessen steadily soon after that time.

Result.—No improvement. Steadily increasing uræmia from two weeks after operation until death. An attack of cerebral hemorrhage, with aphasia and left hemiplegia, occurred on January 24, 1904. Death from cerebral hemorrhage on January 30, 1904, nearly eight weeks after operation.

ANALYSIS OF CASES.

An outline only of the various features of the histories of the seventy-two cases just recorded can be attempted. For details the reader is referred to the individual histories.

Sex.—The sexes happen to be equally represented in the seventy-two patients whose histories have just been recorded. Thirty-six males and the same number of females were operated upon.

Age.—Of the seventy-two patients, the youngest was four and a half years, and the oldest sixty-seven years of age. The average age of the seventy-two, at the time of operation, was thirty-four and a half years.

Occupation.—Notes concerning the occupation of patients were rarely made, the matter not being deemed of sufficiently great practical interest. Ten of the patients were themselves physicians, and two were immediate members of the families of physicians.

Family history.—When the family history of the patient seemed to the author to present matters of possible interest in connection with the patient's chronic nephritis, the details were noted. In the balance of the cases the family history is disposed of briefly.

History prior to operation.—An outline is given in each case of the patient's history before operation. A fair number of the patients presented all the clinical features of the disease. Some suffered in one way or another without having such a pointed history as to unmistakably indicate chronic Bright's disease. A few were absolutely unaware of any serious impairment of health until the occurrence of paralysis, of retinitis albuminurica, of uræmic convulsions, or the discovery of albumin and casts in the urine on application for life insurance, brought them suddenly face to face with the fact that they were afflicted with a fatal malady. A careful perusal of the histories cannot fail to impress upon the mind the com-

paratively great frequency with which chronic Bright's disease develops and progresses in an insidious manner, so that the advanced and final stages of the malady are often reached before the patient is aware that there is anything very much wrong with him or her.

Physical examination of the patient.—Equally great with the differences, as just detailed, in the symptoms produced by the disease, were the physical manifestations and objective signs presented by the various patients on examination. In some few there were absolutely no manifestations of chronic nephritis except such as examination of the urine revealed. Others, again, suffered from all conceivable ravages of the disease in distant parts of the body, the brain, the visual organs, the heart and lungs, the digestive system, etc. Between the two extremes mentioned all shades of variation were encountered.

As a matter of fact, the great majority of my patients came to me *for operation*, with a full and realizing knowledge that they were the victims of chronic Bright's disease. Only after all other measures had failed to arrest the downward progress of the disease was the idea of operation entertained, too often only when the end was fast approaching or even at hand.

Existence of chronic Bright's disease prior to operation.

One of the most difficult things to do is to determine the exact date of beginning of a chronic nephritis. The only circumstances, perhaps, under which this can be done with reasonable exactness, is when the chronic nephritis is the outcome or continuation of an acute nephritis occurring either as a primary affection or as a complication of other diseases, influenza, scarlatina, typhoid fever, diphtheria, and other general infections in which the kidneys are liable to become involved. Even then our conclusion that the nephritis dates from such an event may not be correct. The patient *may* have had chronic nephritis prior to the occurrence of the infectious disease, and the supposedly acute nephritis induced by the infection *may* in reality have been only an acute exacerbation of an already existing chronic nephritis. Uncertainty in this respect pertains even to those cases of nephritis which the history indicates have originated during a pregnancy.

Subject to the limitations just stated, an attempt has been

made to determine from the existence of symptoms the *probable* duration of the chronic nephritis prior to operation in each of the cases recorded. Judged by this admittedly defective standard, the average duration of chronic Bright's disease prior to operation in the seventy-two cases was three years and eleven months. That the average duration, as thus estimated, falls far within the real limits, is very certain.

In fifty-eight of the seventy-two cases the period of time prior to operation at which examination of the urine first revealed the presence of chronic Bright's disease could be accurately determined. In these fifty-eight patients the duration of chronic Bright's disease prior to operation, as known from uranalysis, averaged three years and three months.

Date of operation.—The first of the patients whose histories are here recorded was operated upon on November 29, 1892. The last patient included in the list was operated upon on December 5, 1903. More than eleven and a half years have passed since the first operation, and eight months have elapsed between the last operation recorded and the date of going to press.

Place of operation.—The seventy-two operations were performed at the following places:

Galt General Hospital, Galt, Ontario, Canada,	1
Home of the patient,	10
St. Francis' Hospital, New York,	13
Author's private hospital,	19
New York Post Graduate Hospital,	29

Nature of operation performed upon the kidneys.

Decapsulation of both kidneys,	48
Decapsulation and fixation of both kidneys,	16
Decapsulation of both kidneys and fixation of right kidney,	2
Decapsulation of one kidney and removal of the other,	2
Decapsulation and fixation of right kidney,	4

It will be noted that in four cases only one kidney was operated upon, while in sixty-eight cases both kidneys were submitted to operation. Sixty-six of the bilateral operations were performed at one sitting; in two instances the right and left kidneys were operated upon at two separate sittings.

Both kidneys of two patients (Cases No. 14 and 30) were decapsulated a second time.

Operations additional to those performed upon the kidneys.
The following considerable number of additional operations

was performed by the author upon these seventy-two patients operated upon for chronic Bright's disease:

Curettage of uterus,	10
Amputation of cervix uteri,	4
Trachelorrhaphy,	1
Dilatation of anal sphincter,	2
For hemorrhoids,	1
Inguinal shortening of round ligaments,	8
For ventral hernia,	1
For lumbar hernia,	1
For inguinal hernia,	1
Anterior operation for appendicitis,	4
Edebohls' lumbar operation for appendicitis, performed in each instance at the same sitting with the kidney operation,	13
Vaginal hysterio-salpingo-oophorectomy,	1
Ventral suspension of uterus,	2
Breaking up peritoneal adhesions,	1
Plastic operations on ovaries,	3
Left salpingo-oophorectomy,	2
Bilateral salpingo-oophorectomy,	1
Left ovariectomy,	1
Bilateral ovariectomy,	1
Abdominal hysterectomy,	2
Accouchement forcé,	1
Exploration of entire length of left ureter,	1
Resection of rib for pyothorax,	1

All the above mentioned additional operations were performed without a death. In some instances the kidney and the additional operation or operations were performed at the same sitting; in some the additional operation or operations either antedated or followed operation upon the kidneys. In but a few instances was mention made of the concomitant operations in detailing the history of the patient, the concomitant operations having no very evident bearing upon, or relation to, the result of the operation upon the kidneys.

Anæsthetic.—The following list shows the number of cases in which each of several anæsthetics was employed, alone or in combination:

Nitrous oxide and ether,	42
Ether,	17
Nitrous oxide and oxygen,	8
Chloroform,	2
Nitrous oxide and chloroform,	1

Nitrous oxide, ether and chloroform,	I
Nitrous oxide, oxygen, ether and chloroform,	I

As already stated elsewhere, I see no good reason why any surgeon should not use, in his kidney operations, the same anæsthetic to which he is accustomed in his operative work generally. To this broad rule there are exceptions, special reasons for the preference of a particular anæsthetic being now and then given by the predominance of particular complications, especially those affecting the heart, lungs and vascular system. The choice of anæsthetic under these conditions must be made on generally understood and accepted principles, always bearing in mind that in operations upon the kidneys of patients suffering from chronic nephritis the danger is, broadly speaking, greater from the anæsthesia than from the operation itself. This phase of the subject has already been sufficiently elaborated on pages 15 and 69.

Diagnosis of the variety of nephritis as made at operation.

The basis of my classification of the varieties of chronic nephritis, as encountered at operation, and the reasons therefor, have already been set forth at sufficient length (see pages 9, 10 and 13), and need not be here repeated. My classification has met with considerable criticism, particularly on two grounds. The pathologist has contended that it is too simple, and does not embrace all the varieties of chronic nephritis as he individually recognizes them. The answer to this objection is, that pathologists of the highest standing differ so widely from each other in their classifications of the varieties of chronic nephritis that a certain latitude of choice must, in the present unsettled state of our knowledge, be accorded each physician and surgeon. The second ground of objection relates to the difficulty of determining by inspection and palpation of the exposed kidney the variety of nephritis present. This objection, which holds good in small degree and in exceptional cases only, has already been met on page 13. After a still more extended experience I have nothing to add to, or to subtract from, the statements there made.

In a number of my cases the diagnosis, as made from the clinical history, from examinations of the urine, and from inspection and palpation of the kidneys at operation, was clinched by the microscopic examination of small pieces of

kidney tissue removed at operation. As regards the general question of removal of pieces of kidney tissue at operation for purposes of microscopic examination, I still maintain the position enunciated on page 13.

With these explanatory remarks and references to my views already expressed, and the reasons therefor, the varieties of chronic nephritis encountered at operation in my seventy-two cases may be stated as follows:

Right and left chronic interstitial,	22
Left chronic interstitial, right kidney normal,	4
Right chronic interstitial, left kidney normal,	4
Right chronic interstitial, left kidney doubtful,	1
Right and left chronic diffuse,	23
Left chronic diffuse, right kidney normal,	2
Right chronic interstitial, left chronic diffuse,	4
Right and left chronic parenchymatous,	12

From the above it will be seen that one variety of nephritis may affect one kidney and a second variety the other kidney of the same individual, right chronic interstitial and left chronic diffuse nephritis in the same patient having been observed no less than four times.

Unilateral nephritis.—Chronic nephritis affecting one kidney only was noted in eleven of the seventy-two cases, the unilateral nephritis being of the interstitial variety in nine, and of the diffuse variety in two of the eleven patients. My own views, as well as those of others, on the subject of one-sided nephritis, have already been stated on pages 77 and 124. The only points I wish to add and emphasize are that the diagnosis of chronic nephritis affecting one kidney only was made in each case upon the signs and characteristics presented upon inspection and palpation of the kidney at operation; and secondly, that it is not without the pale of possibility that one or other kidney normal to sight and touch might, on microscopic examination, have presented evidences of slight or incipient inflammation. With this limitation, affecting the question of frequency rather than the question of actual occurrence of unilateral nephritis, I submit the observations recorded. These observations I am compelled to interpret as establishing beyond controversy the fact that chronic nephritis may be encountered as a unilateral affection in a hitherto unsuspected fairly large proportion of cases.

Of conditions affecting the kidneys or their capsules and complicating the chronic nephritis present, there were encountered :

Polycystic degeneration of left kidney,	3
Polycystic degeneration of right kidney,	1
Bilateral pyelonephritis with miliary abscesses,	2
Left acute suppurative perinephritis,	1
Right chronic perinephritis,	3
Right and left chronic perinephritis,	10

Convalescence from the kidney operations was uneventful except in the five cases in which the contrary is specified in the histories.

Wound healing.—One hundred and forty incisions were made in the seventy-two patients operated upon.

68 operations on both kidneys,	136
4 operations on one kidney,	4

Total number of wounds,	140
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Deducting 14 wounds made upon seven patients who died within two weeks after operation, in none of which, however, was there the least indication of infection, leaves for consideration of the healing process

126

These 126 wounds healed as follows :

By primary union throughout,	121
By granulation,	5

The cause of infection in the five infected wounds was as follows :

One intractable patient infected both wounds by repeatedly tearing off all dressings,	2
Breaking down of an acute perinephritis antedating operation,	1
Suppuration of a deep perirenal hæmatoma,	1
Slight leakage of urine from surface of kidney,	1

In not a single case was the breaking down the result of infection introduced at operation.

History after operation.—Much diligent investigation, as already stated, has been brought to bear upon following the fortunes and ascertaining the fate of my patients subsequent to operation, with the outcome that I have been enabled to present what is probably as complete a record as it is humanly possible to make of the immediate and remote results attained. These results I will attempt to discuss and analyze in the succeeding chapter.

Urine Examinations.—Much relating to this all-important

part of the history of each patient has already been touched upon in the introductory remarks prefacing the histories (see pages 145 to 147). To go more deeply into the broad question of uranalysis is not within the scope of the present volume.

In preparing my paper of 1901, the greater part of the records of the early urine examinations of the earlier cases was lost or mislaid. It was not found possible, therefore, to present these early examinations in the same complete form in which later records are tabulated.

In the early part of my investigations, the value of an examination of a twenty-four hour specimen of urine was not fully appreciated, and both on that account and for the reason that a single voiding was always obtainable, whereas the collection of a twenty-four hour specimen sometimes proved impossible, I contented myself with the examination of single voidings. Practically all uranalyses, however, recorded in the histories as having been made during the past two years, will be found to be examinations of twenty-four hour specimens.

A record of the examination of a twenty-four hour specimen obtained from each surviving patient within a month or two before preparing for press will be found appended to the history of each survivor. The accomplishment of this achievement, and the possibility of presenting a report of the condition of the patient's general health up to the same recent period of time, are the factors which give the histories the greater part of whatever value they may be found to possess.

Full directions for obtaining and sending a twenty-four specimen of urine are given on page 146.

The urine examinations recorded in connection with the histories of each case were, with probably not a half a dozen exceptions, all made either by Prof. Henry T. Brooks, Professor of Pathology at the New York Post Graduate Medical School and Hospital, or by my assistant, Dr. W. G. Vincent. Their thorough and searching character was frequently attested by comparison with examinations of the same specimen made by others.

In reading the record of the examination of a twenty-four hour specimen of urine of a woman, the almost invariable presence of a trace of albumin, due to more or less leucorrhœa, should always be borne in mind. While *absolutely* normal

urine contains neither albumin nor casts, a specimen containing a trace of albumin, a few hyaline casts, and a normal or approximately normal amount of urea may be regarded as *practically* normal.

The most reliable single criterion of the proper performance of the functions of the kidneys is furnished by the amount of the daily output of urea. To determine the total amount of urea, as well as of other solids excreted by the kidneys in a day, a twenty-four hour specimen of urine is absolutely essential. Yet, valuable as are the indications concerning the health of the kidneys furnished by a knowledge of the daily output of urea, this value is greatly detracted from by varying conditions relating to diet, amount of exercise and other factors which influence the amount of urea formed.

The normal output of urea and solids naturally varies with the weight of the patient. For this reason the patient's weight, or approximate weight, without clothing, is given in connection with each uranalysis table.

ANALYSIS OF RESULTS.

Of the seventy-two patients whose histories have been recorded, seven died within two weeks following operation, twenty-two died at periods of time more or less remote from operation, three disappeared from further observation after leaving hospital and cannot be found, and forty are known to be living.

Eleven years and eight months have elapsed since the first operation, and eight months since the last operation performed upon these seventy-two patients. The average length of time elapsed since operation is two years and ten months for each of the seventy-two.

These seventy-two cases embrace all my operations for chronic Bright's disease performed up to the end of the year 1903. There has thus far been no death, either immediate or remote, among my patients operated upon during the current year of 1904. Were I to add the 1904 cases to the seventy-two cases reported, my statistics would be materially improved.

OPERATIVE MORTALITY

The seven deaths occurring within a period of two weeks after operation represent the operative mortality, which may therefore be stated as 9.7 per cent.

The operative mortality, as is evident from a glance at the causes of death, is that of the disease itself and of its complications, rather than that of the operation as such. As already stated and elaborated on page 79, bilateral renal decapsulation could be performed by an expert in renal surgery upon one hundred perfectly healthy human beings without the necessity of losing a single life. The mortality of different surgeons of equal skill and experience, in operations undertaken for the cure of chronic Bright's disease, will vary according to the class of cases each may be willing to accept for operation.

In judging my own mortality, the fact must be taken into consideration that, for one reason or another, I was compelled to accept cases for operation in which the fatal outcome was an almost foregone conclusion. Patients as well as their physicians, both sometimes represented in one person, insisted that inasmuch as the precise limit beyond which operation could no longer avail to improve the condition of their kidneys was as yet unknown, they were entitled to the benefit of the doubt, and requested or even demanded operation. On the grounds of ordinary humanity the request could scarcely be denied, the more so as a number of my patients in whom the chances before operation seemed equally desperate with those of some of the patients who died, had made unexpected and surprisingly good recoveries.

I have had three patients with chronic Bright's disease die on the very day appointed for operation, all idea of any operation having to be abandoned at the last moment, and I recall with especially painful vividness the passing away of a valuable life while the final preparations for operation were going on in an adjoining room.

Table I embodies the essential facts in connection with the seven cases representing my operative mortality. It will be noted that five of the operative deaths occurred in the first thirty-six, and two in the last thirty-six cases. Of my last thirty-three patients only one died as a result of operation.

Synopsis of Table I.

Sex.—All seven patients were of the male sex.

Age.—The average age of the seven patients was 42 years.

Nature of operation.—Decapsulation of both kidneys was performed on each of the seven patients.

Anæsthetic:

Nitrous oxide and ether,	5
Nitrous oxide and oxygen,	1
Nitrous oxide and oxygen, ether, chloroform,	1

Variety of nephritis:

Right and left chronic interstitial,	4
Right and left chronic diffuse,	2
Right and left chronic parenchymatous,	1

Interval between operation and death.—Average for the seven cases, two and a half days.

TABLE I.—DEATHS OCCURRING WITHIN TWO WEEKS OF OPERATION.

Case No.	Sex.	Age.	Date of operation.	Nature of operation.	Anæsthetic.	Variety of nephritis.	Date of death.	Interval between operation and death.	Cause of death.
24	M.	23	April 11, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic interstitial.	April 19, 1902.	8 days.	Uræmia.
29	M.	34	April 21, 1902.	Decapsulation of both kidneys.	Nitrous oxide and oxygen.	Right and left chronic interstitial.	April 24, 1902.	60 hours.	Uræmia.
32	M.	22	May 2, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic parenchymatous.	May 8, 1902.	6 days.	Acute lobar pneumonia.
34	M.	62	May 26, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic interstitial.	May 26, 1902.	12 hours.	Acute dilatation of heart.
36	M.	50	May 26, 1902.	Decapsulation of both kidneys.	Nitrous oxide, oxygen, ether, chloroform.	Right and left chronic interstitial.	May 26, 1902.	12 hours.	Acute dilatation of heart.
39	M.	67	June 14, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	June 16, 1902.	56 hours.	Uræmia and cerebral hemorrhage.
64	M.	36	June 22, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	June 22, 1903.	6 hours.	Acute dilatation of heart and oedema of lungs.

Causes of death :

Uræmia,	2
Acute dilatation of heart,	2
Cerebral hemorrhage and uræmia,	1
Acute dilatation of heart and œdema of lungs,	1
Acute lobar pneumonia,	1

One death, that of Case No. 47, which in my paper of 1903 I classed as a death due to operation, has been transferred to the list of ulterior deaths. The transfer was made for two reasons. In the first place, death did not occur until fifteen days after operation. Secondly, death was in no wise due to operation, but was the direct result of chronic uræmia which existed at the time of operation. The operations performed in the case under consideration were decapsulation of the right kidney and excision of the cystic left kidney.

ULTERIOR DEATHS.

Twenty-two patients died at periods of time more or less remote from operation and from causes not connected with the operation. The essential facts relating to the histories and the ultimate fate of these twenty-two patients are embodied in Table II. For further details, not contained in the table, the reader is referred to the recorded histories of the individual patients.

Synopsis of Table II.

Sex.—Of the twenty-two patients, thirteen were males and nine were females.

Age.—The average age of the twenty-two patients, at the time of operation, was thirty-five years and nine months.

Nature of operation :

Decapsulation of both kidneys,	18
Decapsulation and fixation of both kidneys,	1
Decapsulation of both kidneys, fixation of right kidney,	1
Decapsulation and fixation of right kidney,	1
Decapsulation of right kidney, excision of left kidney,	1

Anæsthetic :

Ether,	3
Nitrous oxide and ether,	16
Nitrous oxide, ether, chloroform,	1
Chloroform,	1
Nitrous oxide and oxygen,	1

TABLE II. ULTERIOR DEATHS.

Case No.	Sex.	Age.	Date of operation.	Nature of operation.	Anæsthetic.	Variety of nephritis.	Improvement after operation?	Date of death.	Interval between operation and death.	Cause of death.
3	F.	28	May 11, 1893.	Decapsulation and fixation of right kidney.	Ether.	Right chronic diffuse. Left kidney also diseased.	Moderate? lasting eight years?	May, 1901.	8 years.	Abdominal hysterectomy.
11	F.	28	November 4, 1899.	Decapsulation and fixation of both kidneys.	Ether.	Right chronic interstitial. Left kidney healthy.	Decided, amounting to a practical cure.	November 4, 1900.	1 year.	Operation for ruptured tubal pregnancy.
17	F.	33	October 17, 1901.	Decapsulation of both kidneys.	Ether.	Right and left chronic parenchymatous.	Decided, lasting to within ten days of death.	December 15, 1901.	2 months.	Suppurative nephropylitis.
19	F.	43	December 3, 1901.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic interstitial.	Decided, lasting three months.	December 9, 1902.	1 year.	Chronic nephritis and endocarditis.
27	M.	21	April 16, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	Decided, lasting seven months.	January 18, 1903.	9 months.	Uræmia.
28	M.	24	April 21, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic parenchymatous.	Moderate and of brief duration.	April 19, 1903.	1 year.	Uræmia.

30	M.	26	May 1, 1902.	Decapsulation of both kidneys.	Nitrous oxide and oxygen.	Right and left chronic intersti- tial.	Moderate, lasting six months.	March 31, 1904.	1 year and 11 months.	Uræmia, un- relieved by a second renal decapsulation.
31	F.	43	May 2, 1902.	Decapsulation of both kidneys and fixation of right kidney.	Nitrous oxide and ether.	Right and left chronic diffuse.	Very decided, lasting until death.	April 22, 1904.	2 years.	Cerebral hemorrhage.
35	M.	56	May 26, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic intersti- tial.	Moderate, lasting two months.	November 6, 1902.	5 months.	Uræmia.
40	M.	29	June 26, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic intersti- tial.	None.	November 1, 1902.	4 months.	Acute dila- tation of heart.
44	M.	51	October 26, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	Moderate and of brief duration.	September 10, 1903.	10½ months.	Acute dila- tation of heart.
45	F.	39	November 13, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic intersti- tial.	Decided, lasting until near death.	February 23, 1904.	1 year and 3 months.	Cerebral embolism, dur- ing an attack of grippe.
46	M.	35	November 17, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic intersti- tial.	Decided, lasting nine months.	June 18, 1904.	1 year and 7 months.	Uræmia.
47	M.	23	November 26, 1902.	Decapsulation of right kidney. Left nephrec- tomy.	Nitrous oxide and ether.	Right and left chronic intersti- tial. Left kidney converted into a huge cyst.	None.	December 11, 1902.	15 days.	Uræmia.

49	F.	26	December 5, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic paren- chymatous.	None, due to complicating suppurative coxitis.	April 7, 1903.	4 months.	Septic pneu- monia, due to suppurative coxitis.
56	M.	45	April 6, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic paren- chymatous.	Decided for four months.	November 10, 1903.	7 months.	Chronic pleuro - pneu- monia.
62	M.	46	June 4, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	Decided, lasting seven months.	February 28, 1904.	9 months.	Heart fail- ure and uræ- mia, during an attack of grippe.
63	F.	63	June 10, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	Temporary and slight.	March 7, 1904.	8 months.	Various con- ditions, includ- ing uræmia.
65	M.	27	June 22, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic intersti- tial.	None.	September 14, 1903.	3 months.	Uræmia.
66	M.	50	July 6, 1903.	Decapsulation of both kidneys.	Nitrous oxide, ether, chloro- form.	Right and left chronic diffuse.	None.	July 26, 1903.	20 days.	Oedema of lungs.
68	F.	16	October 5, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right chronic interstitial. Left chronic diffuse.	Decided, lasting three months.	February 20, 1904.	4½ months.	Gangrene of tonsils and palate, follow- ing grippe.
72	M.	34	December 5, 1903.	Decapsulation of both kidneys.	Chloroform.	Right and left chronic intersti- tial.	None.	January 31, 1904.	2 months.	Cerebral hemorrhage.

Variety of nephritis:

Right and left chronic interstitial,	9
Right chronic interstitial,	1
Right chronic interstitial, left chronic diffuse,	1
Right and left chronic diffuse,	6
Right chronic diffuse,	1
Right and left chronic parenchymatous.	4

Wound healing was by primary union throughout in each of the forty-three wounds of these twenty-two cases.

Interval between operation and death:

The longest period of time elapsed between operation and death was eight years; the shortest, fifteen days. The average duration of life after operation was one year and one month for each of the twenty-two patients.

The question of improvement following operation:

Of the twenty-two patients:

Six received no benefit from operation. In one of the six, possible benefit from operation was prevented by suppurative coxitis.

One experienced slight and temporary improvement only.

Five experienced moderate improvement, the average duration of such improvement, however, amounting to one year and nine months for each of the five cases.

Ten experienced decided improvement, lasting in three cases until death from causes other than chronic nephritis. The average duration of decided improvement for each of these ten cases was nearly nine months.

Causes of death:

Abdominal hysterectomy, eight years after kidney operation,	1
Operation for ruptured tubal pregnancy, one year after operation on kidneys,	1
Septic pneumonia, due to suppurative coxitis,	1
Chronic pleuro-pneumonia,	1
Gangrene of tonsils and palate, following grippe,	1
Cerebral embolism, in the course of grippe,	1
Heart failure and uræmia, in the course of grippe,	1
Cerebral hemorrhage,	2
Suppurative pyelonephritis,	1
Œdema of lungs,	1
Endocarditis,	1
Acute dilatation of heart,	2
Uræmia,	8

Of the twenty-two deaths, nine were due to causes that stood in no direct relation to chronic nephritis. Two of the nine died after operations performed by other surgeons, and three other patients succumbed to grippe. Thirteen of the twenty-two ulterior deaths may be fairly ascribed to chronic nephritis and its sequelæ and complications.

THE SURVIVORS.

Having followed twenty-nine of our seventy-two patients to the end of life, let us now turn our attention to the forty-three survivors. The main facts regarding the survivors will be found embodied in Table III. The detailed history of each case may be consulted for further particulars not contained in the table.

Synopsis of Table III.

Sex.—Sixteen of the forty-three survivors are males, and twenty-seven are females.

Age.—The youngest survivor was four and a half years, and the oldest was fifty-one years of age at the time of operation. The average age of the forty-three was thirty-one years, eight and a half months.

Existence of chronic Bright's disease prior to operation.

The average duration of chronic nephritis before operation, as judged from the history and the symptoms, was three years and eight months for each of the forty-three survivors. The average period before operation at which albumin and casts were first discovered in the urine was two years and two months.

Nature of operation.

Decapsulation of both kidneys,	23
Decapsulation of left kidney and right nephrectomy,	1
Decapsulation and fixation of right kidney,	3
Decapsulation and fixation of both kidneys,	15
Decapsulation of both kidneys and fixation of right kidney,	1

Anæsthetic.

Ether,	14
Nitrous oxide and ether,	21
Chloroform,	1
Nitrous oxide and chloroform,	1
Nitrous oxide and oxygen,	6

TABLE III.—THE SURVIVORS.

Case No.	Sex.	Age.	Date of operation.	Nature of operation.	Anæsthetic.	Variety of nephritis.	Date of last urine examination.	Result. (For fuller details consult Histories.)
1	F.	18	November 29, 1892.	Decapsulation and fixation of right kidney.	Ether.	Right chronic interstitial. Left kidney probably healthy.	May 27, 1904.	Ideal cure. Urine normal and patient in excellent health more than eleven and a half years after operation.
2	F.	39	March 10, 1893.	Decapsulation and fixation of both kidneys.	Ether.	Right and left chronic interstitial.		Unknown. Patient passed from observation six weeks after operation.
4	F.	25	January 11, 1896.	Decapsulation and fixation of both kidneys.	Ether.	Left chronic interstitial. Right kidney healthy.	May 18, 1904.	Ideal cure. Urine normal and patient in excellent health eight years and four months after operation.
5	F.	42	April 1, 1897.	Decapsulation and fixation of right kidney.	Ether.	Right chronic interstitial. Left kidney probably healthy.	May 21, 1904.	Very decided improvement; at one time almost a cure. One kidney only operated upon. At present, seven and a half years after operation, urine and general health much better than before operation.
6	F.	20	January 10, 1898.	Decapsulation and fixation of both kidneys.	Ether.	Left chronic interstitial. Right kidney healthy.	June 4, 1904.	Ideal cure. Urine normal and patient in excellent health six and a half years after operation.
7	F.	30	January 14, 1899.	Decapsulation and fixation of both kidneys.	Ether.	Right and left chronic interstitial.	May 20, 1904.	Ideal cure. Urine normal and patient in excellent health five and a half years after operation.
8	F.	45	March 6, 1899.	Decapsulation and fixation of both kidneys.	Ether.	Left chronic interstitial. Right kidney healthy.	June 28, 1904.	Ideal cure. Urine normal and patient in good health, attacks of gout excepted, five years and three months after operation.
9	F.	30	May 11, 1899.	Decapsulation and fixation of right kidney.	Ether.	Right chronic interstitial. Left kidney?		Unknown. Patient passed from observation five weeks after operation.
10	F.	26	May 12, 1899.	Decapsulation and fixation of both kidneys.	Ether.	Right chronic interstitial. Left kidney healthy.		Unknown. Patient passed from observation four weeks after operation.

12	F.	22	November 5, 1900.	Decapsulation and fixation of both kidneys.	Ether.	Left chronic interstitial. Right kidney healthy.	June 30, 1904.	Ideal cure. Urine normal and general health good, rheumatic manifestations excepted, four years and eight months after operation.
13	F.	19	November 30, 1900. April 19, 1901.	Decapsulation and fixation of right kidney. Decapsulation and fixation of left kidney.	Ether both operations.	Right and left chronic interstitial.	May 14, 1904.	Ideal cure. Urine normal and general health good, occasional rheumatism excepted, three years and eight months after operation on the right, and three years and three months after operation on the left kidney.
14	F.	23	April 6, 1901.	Decapsulation and fixation of both kidneys.	Ether.	Right and left chronic interstitial.	July 10, 1904.	Improvement for eight months after first decapsulation, followed by arrest of improvement, due to much other illness, for more than two years. Then again transient improvement, fol- lowed by relapse. Second decapsulation, per- formed some two months ago, again followed by improvement.
15	F.	31	April 15, 1901.	Decapsulation and fixation of both kidneys.	Ether.	Right and left chronic interstitial.	July 7, 1904.	Ideal cure. Urine normal and patient in ex- cellent health three years and three months after operation.
16	F.	33	May 6, 1901.	Decapsulation and fixation of both kidneys.	Ether.	Right and left chronic diffuse.	May 16, 1904.	Ideal cure. Urine normal and patient in ex- cellent health three years and two months after operation.
18	F.	39	November 10, 1901.	Decapsulation of left kidney. Right kidney removed four months pre- viously.	Nitrous oxide and oxygen.	Right and left chronic parenchy- matous, with infec- tion.	May 25, 1904.	Probable cure, although the persistence of chronic cystitis clouds the clinical picture. Urine practically free from renal elements, and patient feeling perfectly well, two years and eight months after operation.
20	M.	26	January 27, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic parenchymatous.	July 20, 1904.	Steady and continuous improvement in general health since operation, two and a half years ago. Condition of urine subject to fluctuations, though at all times better than before operation.
21	F.	4½	February 19, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic parenchymatous.	May, 1904.	Ideal cure. Urine normal and patient in ex- cellent health nearly two and a half years after operation.

22	M.	36	March 26, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	May 18, 1904.	Great improvement. General health good and urine gradually nearing a normal condition, two years and two months after operation.
23	F.	34	April 4, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic interstitial.	June 27, 1904.	Practical cure. Urine practically normal and no renal symptoms two years and three months after operation. General health affected by a multitude of nervous disorders.
25	M.	29	April 15, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic interstitial.	May 21, 1904.	Decided and progressive improvement in gen- eral health, which at present, two years and three months after operation, is about all that could be desired. Urine steadily approaching normal condition.
26	F.	36	April 16, 1902.	Decapsulation and fixation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	May 19, 1904.	Ideal cure. Urine normal and patient's general health satisfactory two years and three months after operation.
33	M.	20	May 12, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic parenchymatous.	July 7, 1904.	Contradictory. Great improvement in general health without corresponding improvement in condition of urine.
37	M.	51	June 2, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	July 19, 1904.	Great improvement, amounting to a practical cure, attained in nine months after operation and lasting about six months. Since then indications of a relapse or a sustained exacerbation. General health and urine, however, vastly better than before operation, more than two years ago.
38	F.	49	June 12, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	July 1, 1904.	Great and steady improvement in general health and urine, continuous to date, more than two years after operation.
41	F.	27	October 2, 1902.	Decapsulation and fixation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	July 8, 1904.	Practical cure. Urine practically normal and no renal symptoms. General health affected by chronic disorders of the pelvic organs.

42	M.	36	October 10, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right chronic interstitial. Left chronic diffuse.	May 23, 1904.	Probable cure. Urine normal and general health good one year and nine months after operation.
43	M.	34	October 13, 1902.	Decapsulation of both kidneys.	Nitrous oxide and oxygen.	Right and left chronic diffuse.	July 14, 1904.	Decided improvement in general health and urine, progressive, notwithstanding the existence of advanced pulmonary tuberculosis, to date, one year and nine months after operation.
48	F.	42	December 4, 1902.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	July 3, 1904.	Decided improvement in general health and urine, progressive to date, one year and seven months after operation.
50	M.	34	December 14, 1902.	Decapsulation of both kidneys.	Nitrous oxide and oxygen.	Right and left chronic diffuse.	July 4, 1904.	Decided improvement in general health and urine, progressive to date, one year and seven months after operation.
51	F.	28	December 22, 1902.	Decapsulation and fixation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	May 27, 1904.	Decided improvement in urine, and slight improvement of general health, one year and seven months after operation.
52	M.	35	February 6, 1903.	Decapsulation of both kidneys.	Nitrous oxide and oxygen.	Right and left chronic diffuse.	June 5, 1904.	Decided improvement in urine. Only slight improvement of general health, due to com- plicating diseases.
53	F.	23	February 17, 1903.	Decapsulation of both kidneys.	Chloroform.	Right and left chronic parenchymatous.	July 1, 1904.	Ideal cure. Urine normal, and patient in perfect health one year and five months after operation.
54	M.	29	February 19, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	July 1, 1904.	Decided and progressive improvement in general health and urine for fourteen months after operation. Then an attack of renal congestion, from which he is at present only slowly recovering.
55	F.	38	March 16, 1903.	Decapsulation and fixation of both kidneys.	Nitrous oxide and ether.	Left chronic interstitial. Right kidney healthy.	June 24, 1904.	Practical cure. Urine normal and no renal symptoms one year and four months after operation. General health impaired by a vast number of nervous symptoms.

57	M.	33	April 7, 1903.	Decapsulation of both kidneys.	Nitrous oxide and oxygen.	Right and left chronic parenchymatous.	May 20, 1904.	Decided improvement in urine, progressive to date, one year and three months after operation. General health good, both before and since opera- tion.
58	F.	28	April 7, 1903.	Decapsulation of both kidneys.	Nitrous oxide and oxygen.	Left chronic diffuse. Right kidney healthy.	May 20, 1904.	Decided improvement in urine, one year and three months after operation. General health unsatisfactory, both before and since operation, owing to pelvic complications.
59	M.	47	May 11, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic interstitial.	May 31, 1904.	Decided improvement in general health and urine, progressive to date, one year and two months after operation.
60	M.	22	May 27, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right chronic interstitial. Left chronic diffuse.	July 21, 1904.	Contradictory. Decided improvement in gen- eral health without corresponding improvement in condition of urine.
61	F.	44	May 29, 1903.	Decapsulation of both kidneys. Fixation of right kidney.	Nitrous oxide and ether.	Left chronic diffuse. Right kidney normal.	July 16, 1904.	Decided improvement in general health and urine for nine months after operation, followed by relapse.
67	F.	38	July 7, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right chronic interstitial. Left chronic diffuse.	April 10, 1904.	Satisfactory improvement in general health and urine, continuous to date of last report, nine months after operation.
69	M.	27	October 17, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic parenchymatous.	July 11, 1904.	Contradictory. Great improvement in general health and no improvement in condition of urine.
70	M.	45	October 29, 1903.	Decapsulation of both kidneys.	Nitrous oxide and chloro- form.	Right and left chronic diffuse.	June 1, 1904.	Satisfactory improvement in general health and urine, continuous to date, eight months after operation.
71	M.	24	November 2, 1903.	Decapsulation of both kidneys.	Nitrous oxide and ether.	Right and left chronic diffuse.	June 2, 1904.	Very decided improvement in general health, and satisfactory improvement in urine, eight months after operation.

Variety of nephritis.

Right and left chronic interstitial,	8
Left chronic interstitial,	5
Right chronic interstitial,	3
Right chronic interstitial, left kidney doubtful,	1
Right chronic interstitial and left chronic diffuse,	3
Right and left chronic diffuse,	15
Left chronic diffuse,	1
Right and left chronic parenchymatous,	7

Period of observation subsequent to operation.—The first of the forty-three surviving patients was operated upon eleven and a half years ago, and the last seven months ago. The average length of time elapsed between operation and last report is three years for each of the forty-three survivors.

Present condition of survivors.—The final results to date may be stated in a general way, subject to comments to follow, as follows:

Result unknown,	3
Unimproved,	3
Improved,	20
Cured,	17

In the three cases in which the result is unknown, Cases Nos. 2, 9 and 10, the patients passed from further observation after leaving hospital, four, five and six weeks, respectively, after operation.

Three patients present paradoxical or contradictory results that are difficult to understand, in that the general health is very markedly improved ever since operation, while there is no corresponding improvement in the condition of the urine. These three patients, Cases Nos. 33, 60 and 69, are rated as unimproved by the writer, although each of the three patients is more than pleased with the results of the operation.

Two patients, Cases Nos. 52 and 58, show decided improvement in the condition of the urine, while the general health of both is affected by complicating illness not connected with chronic nephritis. These two patients are brother and sister.

Three patients, Cases Nos. 14, 54 and 61, after periods of improvement of varying length, are at present suffering from a decided relapse. Patient No. 14, after improvement for eight months following operation, suffered from many general infections for two succeeding years, each infection affecting the kidneys. A second decapsulation of both kidneys, recently

performed, has again put her in a better way. In Case No. 61 decided improvement in general health and in the condition of the urine for nine months after operation, amounting almost to a practical cure, was followed by a grave relapse.

One patient, Case No. 20, has made steady gain in general health and in the condition of his urine during the two and a half years elapsed since operation, progress being interrupted, however, by frequent exacerbations of his chronic nephritis.

Twelve patients, Cases Nos. 22, 25, 38, 43, 48, 50, 51, 57, 59, 67, 70, 71, have made and are making steady and satisfactory progress toward cure. This progress, in several of them, has now and then been interrupted by slight and temporary exacerbations of chronic nephritis.

Two patients, Cases Nos. 5 and 37, who had at one time progressed to what might be termed a practical cure, are not at the present time quite as well as they were at one period following operation. The general health and the condition of the urine of both patients, however, are vastly better than for many years prior to operation, and, comparatively speaking, they are enjoying good health.

Seventeen patients, finally, appear to be cured of their former chronic nephritis as a result of the operation performed upon their kidneys. The main facts regarding the varieties of nephritis from which these seventeen patients suffered, the approximate length of time required by the kidneys to regain their health, and the period of time elapsed since operation, will be found summarized in Table iv. The shortest period of time after operation at which the urine was found normal was one month after operation; the longest time thus far required for the urine to return to a normal condition was two years and six months; the average for the seventeen cases was eight months. The shortest interval elapsed between the dates of operation and of this report is one year and four months, the longest eleven years and eight months. The average length of the period of observation since operation for the seventeen patients is exactly four years.

Classification of cures.—The division of cures into ideal and practical, which I have presumed to make, requires a word of explanation. An ideal cure implies that the patient's urine remains constantly normal, and that the general health of the

TABLE IV.—AUTHOR'S CASES OF CHRONIC BRIGHT'S DISEASE
CURED BY OPERATION.

Case No.	Date of operation.	Variety of nephritis.	Approximate time from operation to return of urine to normal.	Time elapsed since operation.
1	Nov. 29, 1892.	Chronic interstitial.	2 months.	11 years, 8 months.
4	Jan 11, 1896.	Chronic interstitial.	4 months.	8 years, 6 months.
6	Jan. 10, 1898.	Chronic interstitial.	1 month.	6 years, 6 months.
7	Jan. 14, 1899.	Chronic interstitial.	5 months.	5 years, 6 months.
8	March 6, 1899.	Chronic interstitial.	4 months.	5 years, 4 months.
12	Nov. 5, 1899.	Chronic interstitial.	2 months.	4 years, 8 months.
13	Nov. 30, 1900. April 19, 1901.	Chronic interstitial.	5 months.	3 years, 3 months.
15	April 15, 1901.	Chronic interstitial.	7 months.	3 years, 3 months.
16	May 6, 1901.	Chronic diffuse.	7 months.	3 years, 2 months.
18	July 9, 1901. Nov. 10, 1901.	Chronic parenchymatous.	2 years, 6 months.	2 years, 8 months.
21	Feb. 19, 1902.	Chronic parenchymatous.	2 years.	2 years, 5 months.
23	April 4, 1902.	Chronic interstitial.	1 year, 8 months.	2 years, 3 months.
26	April 16, 1902.	Chronic diffuse.	9 months.	2 years, 3 months.
41	Oct. 2, 1902.	Chronic diffuse.	4 months.	1 year, 9 months.
42	Oct. 10, 1902.	Right chronic interstitial. Left chronic diffuse.	4 months.	1 year, 9 months.
53	Feb. 17, 1903.	Chronic parenchymatous.	3 months.	1 year, 5 months.
55	March 16, 1903.	Chronic interstitial.	8 months.	1 year, 4 months.

patient is good or excellent in every way. Thirteen of the seventeen cures belong to this category. A practical cure means that the patient's urine is normal, and that the patient is free from all symptoms referable to the kidneys, but that symptoms due to associated diseases of various kinds other than chronic nephritis interfere with the enjoyment of perfect health. Four of my seventeen cures are classed as practical cures.

The number of patients on the "cured" list has varied from time to time, the general tendency, however, being toward a constant lengthening of the list. One patient, whose name at one time figured on the list of cures, has since died an accidental death, and as the permanence of the cure thus became impossible of proof, the name was transferred from the list of cures to the list of deaths. Four other patients were at one time since operation entitled to a place on the list of cures. Their names have been removed from the list—temporarily only, let us hope, for at least some of them—because they are at the present writing suffering either from a relapse or from an exacerbation of a not quite vanished chronic nephritis.

Exacerbations of chronic nephritis occurring in the course of apparent progress toward cure are not an uncommon event. Nor, if we consider how frequently and easily the functions of healthy kidneys are temporarily disturbed, need we wonder that kidneys more or less diseased, or kidneys convalescent from illness, are exceedingly prone to exacerbations of chronic inflammation, and more than ordinarily susceptible to the influences of acute general infections of the system. To put it in another way, the healthy kidneys participate more or less in every infection involving the body in general, and unhealthy or weak kidneys are undoubtedly more susceptible to infections than healthy kidneys. Add to this the fact that patients whose kidneys have been operated upon for chronic Bright's disease, as a practically universal rule, watch their general health and the condition of their urine more closely than ever before, and the explanation is apparent why every fluctuation in either general health or the health of the kidneys is promptly brought to the attention of the surgeon who operated. Fortunately, the great majority of these exacerbations of chronic nephritis after operation, and of new infections of kidneys not

quite well, generally run their course and pass away, although with less uniformity and certainty, and with relatively greater disturbance of the general health, than obtains in the great majority of infections of previously healthy kidneys.

Table v. shows at a glance the general results, as well as the results obtained in the different varieties of nephritis.

TABLE V.—THE RESULTS IN RELATION TO THE VARIETIES OF NEPHRITIS.

Variety of nephritis.	Deaths occurring within two weeks of operation.	Ultior deaths from chronic nephritis.	Ultior deaths from other causes.	Unimproved.	Improved.	Cured.	Result unknown.	Total.
Chronic interstitial.	4	8	2		4	10	3	31
Right chronic interstitial and left chronic diffuse.			1	1	1	1		4
Chronic diffuse.	2	4	3		13	3		25
Chronic parenchymatous.	1	1	3	2	2	3		12
Total.	7	13	9	3	20	17	3	72

CONCLUSION.

The surgical treatment of chronic Bright's disease, proposed and advocated by the author, is on trial, and will be judged by its results. In diseases which, like chronic nephritis, run a protracted course, years of patient observation are required to determine and establish finally and definitely the value of any method of treatment. The author is fully aware that a much longer period of observation, than the period of time elapsed since the introduction of the procedure, is necessary before final judgment can be passed upon the real and full value of renal decapsulation for chronic Bright's disease.

The results obtained to date by the author in the seventy-two cases reported, have been detailed fully, frankly and without reservation in the foregoing pages. Let us sum up what the evidence to be adduced at the present time from these results may show in favor of, as well as against, the surgical treatment of chronic nephritis.

In the first place, renal decapsulation for chronic Bright's disease may be charged with seven deaths following upon the heels of operation. Let us admit, for the sake of argument, that these seven deaths were *all* due to operation—a matter by no means settled, as practically every one of the seven patients was within a few weeks, if not days, of the natural termination of life by the disease. These seven deaths as a result of operation are fully offset by an equal or larger number of patients snatched from impending death by operation. At least nine other of my patients, who were considered at death's door when I operated, have had months and years added to their lives by the operation, and a number of the nine are alive and well to-day. The sum total of life added as a result of operation in these nine cases, *very* far exceeds the curtailment of life which the operation *may* have caused in the seven patients who died soon after, let us say as a result of operation. The added years of life, in addition, were for the greater part years of comparative health, comfort and useful-

ness, as compared with the days or weeks of suffering which, had operation *not* been performed, would have been the lot of the seven unfortunates who died. To put it in another way: Of sixteen sufferers from chronic nephritis who came to me for operation, and whose deaths were immediately imminent by virtue of the disease, nine were saved by operation, while in seven the attempt to save life failed.

Of the twenty-two ulterior or remote deaths none were due to operation. Thirteen of the twenty-two ultimately died of chronic nephritis or its complications. Of these thirteen only six received no appreciable benefit from operation. The worst that can be charged against operation in these six cases is that the operation did no good; it certainly did no harm. The balance of the thirteen, as well as the nine patients who finally died of causes other than chronic nephritis, were all more or less benefited by the operation, the duration of improvement in these sixteen patients alone amounting, up to the present time, to a total of more than sixteen years.

Of the surviving patients, even the three classed by the author as unimproved have experienced such marked benefit in general health that, personally, each of the three is abundantly satisfied with the results of operation.

Next come the twenty patients who have all experienced decided improvement in general health and in the condition of the urine as the result of operation. A majority of the twenty appear to be on the high road to complete health, and bid fair to figure among the cures of my next report.

Finally, we reach the seventeen cures of chronic Bright's disease attained as a result of operation. These seventeen cures, alone and in themselves, would justify all the work that has been done, even if no benefit whatsoever had accrued to the balance of my patients. This justification, in the author's opinion, will still hold good, even if some of the cases now classed as cured should relapse, or in the future become the victims of a new nephritis.

Of the entire number of seventy-two patients, therefore, thirteen received no benefit from operation, while fifty-nine patients experienced amelioration varying all the way from slight and temporary improvement to complete cure. In nine cases the operation proved directly life-saving by rescuing the patient from immediately impending death.

In judging the above recorded results, the fact should be borne in mind that the immense majority of my patients came for operation only after all other measures and treatment had failed to arrest the unrelenting deathward progress of their chronic nephritis.

The evidence submitted, in the author's opinion, not alone justifies the surgical treatment of chronic Bright's disease, but establishes surgery as at present the main, if not the only, hope of sufferers from a hitherto incurable malady.

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